OIML TC9/SC1, Revision R76

Comments on the Working Draft (15 December 2003) and Secretariat's Responses

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
			Abbreviations used in the following: P+ Proposal accepted and considered in 1CD P- Proposal not accepted Section numbers always refer to 1CD (2004)
General	CZ	We support the establishment of technical working group for this WD	No critical points have been identified; therefore the establishment of a technical working group seems not necessary; see also SI comment below.
General	NL	We think it is a good idea to establish one or more small working groups for specific tasks.	see response to CZ comment above
		1 Change in the entire text the expression "*OIML Certificates*" into "*OIML Certificates of Conformity*".	P- Even OIML Document P1 uses both terms
		2 We suggest adding one or more formats (examples) of OIML Certificates of Conformity dedicated to non-automatic weighing instruments (clauses C.4 and D.4.1) as a separate Annex. In a CIML-meeting, it has also been suggested to complete relevant OIML Recommendations with a dedicated format of an OIML Certificate of Conformity.	P+ However, since this a basic issue, BIML shall decide; examples have not yet been worked out
		3 The calculations of Gross, Net and Tare are not very clear. In clause 4.6.11, there are a few examples but this clause is meant for printouts only. Also there is no example for a multi-range scale.	P+ See new examples in new section 4.6.12
		In this respect, the current R76-1 too, is not very easy to read. For the correct calculation, several clauses have to be read simultaneously.	P+ In order to ease finding important clauses respective references have been added to the terms defined in chapter T.8. Accordingly the sub-heading "(terms and

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
			definitions)" of chapter "Terminology" has been changed into "(terms, definitions and references)".
		We propose to add a separate clause about the indication (displaying and printing) of Gross, Net, and Tare values.	P+ See new definition of "Indications of an instrument" (T.1.3) and new chapter "Examples of indications of weighing results" (4.6.12) with 6 examples (4.6.12.1 to 4.6.12.6)
		4 According to our opinion, there must be a very clear distinction between the **requirements** the instrument has to fulfill, and the **tests** to check this compliance. Also refer to the US comment 2.5.	P- There is already a sufficiently clear distinction
		Therefore, we are in favor of splitting up OIML Recommendations in 3 or 4 clearly separated "Parts": Part 1: Requirements the **instrument** has to fulfill (including the terminology) Part 2: Metrological control (by or on behalf of the government) Part 3: Testing procedures (type tests) (for the testing laboratories) Part 4: Test report Format. (for the testing laboratories and the Certificate system) (Parts 2 and 3 might be combined)	P- There was a clear vote against changing the structure
General	RO	We agree with the establishment of small working groups for specific tasks as detailed in the OIML Directives for Technical Work	see responses to CZ and NL comments above
General	SI	We think that is reasonable to establish working groups only for tasks, where several members have different opinions about important requirements.	Yes; see responses to CZ, NL and RO comments above
General	UK	Regarding the EMC tests listed in the Bibliography. The Bibliography calls up the current versions of the IEC EMC tests. However these standards are revised at very regular intervals. Therefore it is possible (even probable) that a manufacturer may already have his instrument tested to the latest version of the standards. Therefore it is possible that the tests will have to be repeated to the "old" versions of the standards listed in OIML R76. This adds to cost. In addition, type approval laboratories will be burdened with the additional cost of running two versions of the IEC tests - the "old" version for R76 and the current	

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		versions for other EMC testing purposes. We suggest that the Bibliography refers to the latest versions of the standards but carries an additional clause such as : "The usage of later revisions to these standards is permissible." See also B.3	P+ See respective note added to the introduction of Annex B (rather than the Bibliography)
General	US	Please note that: • All TC9/SC1changes to R 76-1 (1992) in the WD revision dated 15 December 2003 are in red and underlined text. • ~~Strike out blue text~~ indicates U.S. recommended deletions to the WD. • U.S. recommended ~~additions~~ to the WD are indicated by blue double underlined text.	
T	CECIP	Please fit in the definitions for “Subsequent verification” and “In-service inspection”.	P- Not necessary because this is explained in VIML. But in 8.1 “in-service inspection” has been changed into “inspection” (this term is defined in VIML, too)
T	NL	Add the well-known abbreviations *“VIM”* and *“VIML”* at the appropriate place in the introduction to this clause. And/or add a complete overview of all abbreviations used in this recommendation.	P+ “VIM” and “VIML” have been added P- Is this really necessary? However, since this a basic issue, we suggest that BIML shall decide.
T.1.2	AU	We are concerned with the definition of non-automatic weighing instruments. It is difficult to justify the distinction between a static non-automatic weighing instrument which, if the operator is replaced by a PLC for example, suddenly becomes a completely different category of instrument. The distinction appears to principally rely on the operator being involved in “intelligent action” which could affect the weighing result. This raises issues such as whether or not checking a stability light, or looking for non-changing displays can be considered to be ‘intelligent action’. We hold the view that distinctions based on static or dynamic operation are more appropriate than the current or proposed definition.	P- There was a clear vote against this proposal
T.1.2	US	There appears to be a conflict with the first sentence that states that a non-automatic weighing instrument “requires the intervention of an operator during	

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		the weighing process to determine the weighing result" and the last statement which states that a "non-automatic weighing instrument may be self-indicating." The term "self-indicating" may be misinterpreted as being synonymous with "determine." The U.S. believes that the phrase "to determine the weighing result, or" is unnecessary and recommends that it be deleted in T.1.2. as follows: T.1.2 Non-automatic weighing instrument Instrument that requires the intervention of an operator during the weighing process ~~to determine the weighing result or~~ to decide that the weighing result ~~it~~ is acceptable.	P+ See T.1.2; in addition the note has been adapted accordingly
T.1.2.11	JP	Please clarify "Vehicle mounted instrument, vehicle incorporated instrument, road vehicle onboard instrument" with concrete description.	P+ See T.1.2.11: A respective note has been added and the examples have been modified.
T.1.2.11	NL	The example *"pallet weigher"* needs clarification. There is also a pallet weigher consisting of a U-shaped load receptor and not meant to be moved. The pallet weigher meant here is the one on wheels. Therefore, we suggest adding "*..., **the appropriate kind of** pallet weigher*"	P+ This example has been deleted; see response to JP comment above
T.1.2.11	UK	According to internet Cambridge dictionary, "utensil" means "a tool with a particular use, especially in a kitchen or house: eg In the drawer was a selection of kitchen utensils - spoons, spatulas, knives and whisks." If "vehicle" is not sufficient, is there a better word than utensil e.g. device?	P+ see "device" in T.1.2.11
T.1.2.11	US	The U.S. requests clarification of the term "similar utensil" in the definition of a mobile instrument.	P+ see response to UK comment above
T.1.2.12	NL	We propose to change the title and the text to "*Transportable instrument for weighing road vehicles*". To us, the word "*portable*" gives the impresson of instruments to be carried by hand.	P+ Heading has been changed into "Portable instruments for weighing road vehicles"; "portable" has not been changed because of the commonly used term "portable weighbridge" (see examples and UK comment on T.1.2.12)
T.1.2.12	SA	The second paragraph in the Note is a bit vague and open to two possible interpretations, namely –	

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		1. That certification of portable instruments that calculate the total mass by summing up the partial axle (or wheel) loads determined one after the other are not covered by the Recommendation. OR 2. That portable instruments that calculate the total mass by summing up the partial axle (or wheel) loads determined one after the other are excluded from the provision of the first paragraph which would mean they are covered by the Specification. Clarification on this Note is recommended.	P+ The last sentence of the note: “This excludes...” has been deleted; see also amended Notes 1 and 2 under 4.19
T.1.2.12	UK	T.1.2.12 defines “Portable instrument” as referring only to weighing road vehicles. Do you mean “portable weighbridge” instead? It is commonly understood that a “portable instrument” is simply an instrument that can easily be moved. “Portable” just means “easy to move”, as in “portable television”. To define the word “portable” as meaning specific only to road vehicles is not sensible, and may lead to confusion.	P+ See new heading for T.1.2.12 (see also response to NL comment above)
T.1.2.13	Secretariat	Add “grading instrument” to terminology (reasoning: term has been introduced in chapter 3.2)	See new section T.1.2.13
T.1.3	NL	The consequence of this definition is that primary indications can not be obtained by printing. Is this really what we want? We propose to use the terms displaying and printing where necessary and use the term indicate to cover both displaying and printing.	P+ This is in line with the new draft VIM (2004); therefore not only T.1.3 (including the note) but also the entire R76 draft revision have been adapted accordingly
T.1.3	SA	The necessity for such a definition is questioned. The new wording is vague and not easily understood. What is the reason for not including a printout as an indication? The primary indication might be a printer, as the document does not forbid this (see T.2.1.3.)	P+ See response to NL comment above
T.2.2	SA	Note: Include “Terminal” in the note.	P+ See T.2.2 and new T.2.2.6; refer also to new Figure 1
T.2.2	UK	From the definition, if an OIML Recommendation covering item does not yet exist, then it cannot be considered as a module (eg as there is no POS Recommendation, a POS cannot be considered as a module. However, it then lists it in the Note as an example of a module.)	P+ Especially T.2.2 (including the Note) and 3.10.2.4, but also the entire document have been adapted accordingly so that all typical modules (as listed in T.2.2) are included, and POS excluded.

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
T.2.2.1	Secretariat	The digital load cell should be defined (reasoning: not yet clearly defined, neither in R60 nor in R76)	A respective note has been added under T.2.2.1 making reference to new Figure 1 that defines all modules
T.2.2.2	CECIP	We would like to remark that problems arise when the metrological community uses special terms which are different to common use at manufacturers and users. The word "indicator" for example in general use means the device that displays the indication. In combination with a digital load cell or a weighing module such a device does not include the ADC. It is not possible to educate marketing, sales and users to terms which they do not understand under their logical view.	P- See responses to SA and UK comments on T.2.2; the definition of modules in terms of the basic sub-assemblies, components and devices used in the new Figure 1 are commonly used; misunderstandings will hopefully be avoided by the new figure.
T.2.2.2	SA	Does this definition refer to the A/D conversion circuitry inside a digital load-cell as an indicator? Definition is confusing and seems to clash with T.2.2.3.	P+ See responses to comments on T.2.2 above, and new Figure 1
T.2.2.2	US	There are many indicators that do not perform the analogue-to-digital conversion of the output signal to display the weighing results in units of mass. Indicators may receive digital input from digital load cells or from separable modules that perform the analogue-to-digital conversion. The U.S. recommends amending the proposed definition for terminology in paragraph T.2.2.2 Indicator as follows: Electronic device of an instrument that may performs the analogue-to-digital conversion of the output signal of the load cell, and further processes the data, and displays the weighing result in units of mass.	P+ See responses to comments on T.2.2 above, and new Figure 1 P+ Has been changed as proposed
T.2.2.4	SA	Replace “An almost complete…” with “That part of the….”	P+ Has been changed in new T.2.2.5 as proposed
T.2.2.4	UK	The language is a bit odd! Would it be better as “...(ie. load receptor, load-transmitting device, load cell, and analogue data processing device), but not having the means to display the weighing result or to operate the instrument.”?	P+ Has been changed in new T.2.2.5 as proposed
T.2.2.5	NL	We propose to add the definition “*Digital data processing unit*”. A “*Terminal*” is typically used to control a computer system and has no processing other than communicating with a computer. A “*Digital data processing unit*” can perform more tasks than a Terminal (for example convert the counts coming from a digital load cell to units of mass). A Terminal will be one of the Digital data processing units.	P+ See new section T.2.2.4, and the new Figure 1, and the changes in section T.2.2.6 (new order)

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
T.2.2.5 and T.2.2.6	SA	If a terminal has to have a keyboard (T.2.2.5.) then the words “terminal without a keyboard” seem confusing in T.2.2.6. as it is not a terminal if it does not have a keyboard. Could a terminal and a load measuring device be the same thing? What is the definition of a “keyboard”? Can this be one or two keys such as balance or tare?	P+ See new definitions in T.2.2 and the new Figure 1
T.2.3.2	US	The term “matrix” in the example of an electronic sub-assembly may be limiting. The U.S. recommends deleting the term “matrix” as follows: Examples: A/D converter, display ~~matrix~~	P+ Term is deleted
T.2.4	CECIP	We suggest replacing the word "obtained" at the end of this sentence with the word "presented".	P+ But instead everything has been aligned with the new wording of VIM (3rd edition, 2004, No. 3.7)
T.2.4.1	NL	The use of *“zero”* could be misleading. Please delete *“(so-called zero)”*	P+ The following changes have been made: Heading: “Displaying component ...” 2nd para: “so-called zero position” has been deleted 3rd para: The last sentence has been deleted
T.3.2.5	NL	Delete *“(single-interval instrument)”* because it is also valid for multi-interval instruments. Or include the definition for multi-interval instruments.	P+
T.3.2.6	US	U.S. manufacturers have reported there has been confusion among regulators and type evaluation laboratories regarding the different requirements applicable to multi-interval and multiple range instruments. This is due to the use of the term “range” in the definitions for both multi-interval and multiple range instruments. A multiple range instrument is one with two or more ranges. A multi-interval instrument has more than one minimum interval in a single range. The U.S. believes that it is technically incorrect to infer that a multi-interval instrument has more that one range since the definition of multi-interval instrument includes the phrase “. . . each with different scale intervals, with the weighing range determined automatically according. . . ”. The U.S. recommends that the definition for a multi-interval instrument be amended as follows:	

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		amended as follows: T.3.2.6. Multi-interval instrument Instrument having one weighing range which is divided into partial weighing ~~ranges~~ segments, each with different scale intervals, with the weighing ~~range~~ segment determined automatically according to the load applied, both on increasing and decreasing loads	P- Not accepted because for more than ten years there were no problems with that; for the sake of clarity, however, the 2nd line has been changed to read: " ...with the partial weighing range determined... "
T.3.4	UK	"...device-but..." should be "...device) but..." (the hyphen should be a closing bracket).	P+
T.4.6	NL	This means that there is no final weighing result when performing influence factor testing. Propose to delete *"and there are no environmental…"*	P+
T.4.6	SA	Is it possible not to have environmental disturbances or influences (e.g. temperatures, humidity etc) affecting an instrument at any given time or does this mean only factors such as wind or vibration?	see comment of NL and response above
T.5.4.4	NL	The second line is a requirement or acceptable solution. This should not be in the chapter Terminology.	P- No change necessary, because there were no problems with that up to now
T.8	UK	"Portable instrument" is out of alphabetical order, between "Terminal" and "Verification scale interval".	P+
2.1	NL	We suggest to mention that in countries where the use of imperial units is allowed, these can be used. Change "*A symbol for carat shall be ct*" to *"The symbol for carat is ct"*	P- This need not be explicitely mentioned in an OIML recommendation. Most of the OIML member states are also members of the meter convention and should therefore use SI units; it is clear that each country is free to allow additional units under their national legislation P+
2.1	SA	2nd Par: The Recommendation states: "A symbol for the metric carat shall be ct." This indicates that there may be other symbols, which could be used. It is suggested that the second sentence of paragraph 2 of 2.1 be amended as follows: "Permissible symbols for the metric carat are ct or CM."	P- Not accepted with reference to OIML Document D2 (1999), Annex A.11

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
2.5	CECIP	The word "binding" has been added to this sentence, concern has been expressed that as this is a recommendation it cannot be mandatory, and the word binding is therefore inappropriate.	P- see US proposal below
2.5	UK	Should the sentence “The terminology given in chapter T shall be considered as binding part of this Recommendation.”, be “The terminology given in chapter T shall be considered as a binding part of this Recommendation.”?	P+ see US proposal below
2.5	US	The U.S. requests clarification whether or not the section on “Terminology” is a “chapter” or a “clause.” The inclusion of the title for the clause/chapter would be helpful to readers who are not familiar with the format of clauses and chapters in the recommendation. The U.S. recommends the language in paragraph 2.5. be amended as follows: The terminology given in chapter T Terminology shall be considered as a binding part of this Recommendation.	P+
3.2	JP	3.2 (**): Exceptional definition should not be made for instruments for transport tariff and garbage weighers.	P- see KR comment and response below
3.2	KR	„The minimum capacity is reduced to 5e for instruments in - class II and III determining a transport tariff and - class III and IIII for garbage weighers.” Delete this, it is enough by applying a table 3. „ Table 3 (*), (**) “ leads to confusion. Proposal: (*), (**) change to footnote	P- There are good metrological reasons for reducing Min for grading instruments (see NL comment below). That is the reason why this exception has also been put into the new (revised) OIML R51. The wording in 3.2 has now been adapted to the latest draft revision R51-1 (No 2.2.2). P+ Yes, will later (in the final version) become footnotes
3.2	NL	Table 3: We suggest to replace in the last column “e” by “d” And in that case, 3.4.3 can be deleted. After Table3: Minimum capacity of 5d (or 5e) is typically used for instruments intended for tariff grading. The requirement could be: *“The* minimum *capacity is reduced to 5d for grading instruments”.*	P- This would not fit to the case of non graduated instruments P- See above P+ See new 3.2 and response to KR comment above

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
3.3	KR	„ 3.3 Additional… (*) “ leads to confusion. Proposal: (*) change to footnote	P+ (*) has been deleted in the heading of 3.3 and in front of “Example... “ under 3.3.3
3.3.3	CECIP	**Example for a multi-interval instrument:** We believe it would be more helpful if the examples of maximum permissible errors on initial verification illustrated the points at which the mpe changed from one value to another, we therefore suggest that the example be modified as follows: The maximum permissible errors on initial verification (mpe, see 3.5.1) are: For m = 0g to 500 g (0 -500e1) mpe = 0,5g For m = 500g to 2000g (500 - 2000 e1) mpe = 1.0g For m = 2000g to 4000g (1000-2000e2) mpe = 2.0g For m = 4000g to 5000g (2000 - 2500e2) mpe = 3.0g For m = 5000g to 15000g (500 - 1500e3) mpe = 10g	P+ Example has been changed, but also corrected: 0 g to 500 g mpe = ± 0,5 e_1 = ± 0,5 g 501 g to 2000 g mpe = ± 1 e_1 = ± 1 g 2002 g to 4000 g mpe = ± 1 e_2 = ± 2 g 4002 g to 5000 g mpe = ± 1,5 e_2 = ± 3 g 5010 g to 15000 g mpe = ± 1 e_3 = ± 10 g
3.4.1	KR	„ 3.4.1 (*), (**) “ leads to confusion. Proposal: (*), (**) change to footnote	P+ (*) is replaced by (see figure 3), and (**) by (see figure 4), and (***) by (see table 5); the stars in front of figures 3,4 and the table 5 have been deleted Figures 3 and 4 have been moved to the end of 3.4.1, and table 5 to the end of 3.4.2
3.4.2	KR	„ 3.4.2 (***) “ leads to confusion. Proposal: (***) change to footnote	P+ See above
3.4.3	NL	This point can be deleted, see our proposal in 3.2	P- See response to NL comment under 3.2
3.5	US	(*) footnote: While R 76 generally agrees with U.S. requirements, the footnote (*) should be elevated to formal status.	P+ (*) and the last line have been deleted; and a new note has been added: ”For multi-interval instruments refer to chapter 3.3 including the example”
3.5.1	PL	We propose the correction: “Note: The absolute value of the maximum permissible error is 0,5 e, 1,0 e or 1,5 e, ie. it is the positive value of the maximum permissible error ~~without positive or negative sign.~~”	P- Not accepted, because wording is sufficiently clear

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
3.5.2	SA	This paragraph states quite clearly that the maximum permissible errors in service are twice those for initial verification and the assumption can be made that these double errors are applicable to subsequent verification, which is carried out on instruments in service. Clauses 8.4.1 and 8.4.2, however, make it quite clear that the double error is only applicable in cases of in-service inspection and that the errors at subsequent verification are the same as at initial verification. It is suggested that reference to 8.4.1 and 8.4.2 be made in clause 3.5.2 in order to ensure clarity in this regard and that paragraph 3.5.2 be amended as follows:- "3.5.2 Value of maximum permissible errors at subsequent verification and upon in-service inspection. As provided for in 8.4.1 and 8.4.2, the maximum permissible errors upon subsequent verification shall be the same as for those for initial verification and twice those for initial verification upon in-service inspection."	P- We have added, however, a reference to 8.4.2 in chapter 3.5.2
3.6.2	NL	The reference to a certain method of testing in the requirements should be avoided in the description of the requirements. Proposal: "*The indications for different positions of a load shall meet the maximum* permissible *errors, when the instrument is* ***loaded*** *according to 3.6.2.1 through 3.6.2.4.* *Note: If an instrument is designed in such a way that loads may be applied in different manners, it may be appropriate to apply more than one of the following* ***loads****."*	P- The proposal deals only with the value of the load but 3.6.2.1 through 3.6.2.4 describe also the place of application or method of loading
3.6.3	US	"de-vice(s)" should be not be hyphenated.	P+
3.7	NL	Referring to our general remark number 4, we are in favor to move this chapter to chapter 8 or Annex A	P- Not accepted, because there was a clear vote against changing the structure of the document

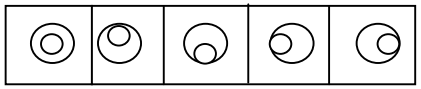
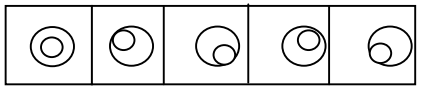
R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
3.7.1	CECIP	We suggest changing the sentence “They shall not have an error greater than 1/3 of the maximum …” to “They shall not have an error greater than 1/3, including the uncertainty, of the maximum …”	P- Not accepted, because this is clear from R111 itself
3.7.1	NL	The use of uncertainty instead of error should be possible for any class of weights. It is a custom to sum the uncertainties of the weights because R111 indicated that. However the latest draft of R111 does not say this any more. Also the error now includes the (expanded) uncertainty. For that reason it might be possible to use the root of the sum of the squares for the calculation of the uncertainty of a number of weights.	P- Note accepted, because this exception has only been introduced as a concession for high precision weights (classes E1 and E2)
3.7.1	RO	We suggest to replace the phrase "If class E2 equivalent weights or better?" with "If class F2 equivalent weights or better?" since in most of the cases the class F1 and class F2 weights (together with class E2 weights) are accompanied by calibration certificates and there is information on their stability in time. The same comment applies also to some class M1 weights. This is why an alternative proposal would be to make no further reference to the accuracy class of the standard weights, but to the availability of the calibration certificate.	P- See response to NL comment above; the intention was to enable testing of class I instruments with E2 (or E1) weights, but not to worsen the present R76
3.7.2	US	“de-vice(s)” should be not be hyphenated.	P+
3.7.3	CECIP	Please find in the following two remarks which describe the problems: 1. We are unhappy with the present situation as well as the alterations suggested now. In our opinion accuracy classes are percentage values, so it is not logical to have requirements for standard weights up to capacities of 1t, 10t and 100t. In the first place we do not understand how these capacities are motivated. Secondly we prefer one regulation valid for all capacities. In the third place we do not think the new proposal will improve the results where it is certain, the costs of the verification increase. 2. The restrictions on the points at which the use of substitute materials may be used instead of standard weights may be used will cause problems in the UK. Typically Weighbridge Test Units in the UK are designed to be at the	P+ See response to NL comment below

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		maximum gross vehicle weight of 44 t, this means that the amount of standard weights carried is approximately 20 tonnes. Under the regime proposed in the clause this would mean that two Weighbridge Test Units would be required for testing any weighbridge with a capacity of between 60 t and 100 t even if they satisfied the repeatability requirement of 0.3e	
3.7.3	NL	We propose to delete the reference to certain values of Max: *"When testing instruments at the place of use, instead of standard weights any other constant load may be used, provided that standard weights of at least 50 % of Max are used."* *If the* repeatability *error is not greater than 0.3 e the portion of standard weights may be reduced to 35 % of Max.* *If the repeatability error is not greater than 0.2 e this portion may be reduced to* 20 *% of Max.* *The repeatability error has to be determined with a load of about the value where the* substitution *is made, by placing it 3 times on the load receptor."* Referring to our general remark number 4, we are in favor to move this last sentence to Annex A	P+ 3.7.3 has been changed as proposed P- There was a clear vote against changing the structure of the document
3.7.3	PL	"Substitution of standard weights at verification When testing instruments at the place of use with Max > 1 t, instead of standard weights any other constant load may be used, provided that standard weights of at least 1 t or 50 % of Max, whichever is greater, are used. ~~For instruments with Max > 10 t, the portion of standard weights may be reduced to 35 % of Max if the repeatability error is not greater~~ than ~~0.3 e.~~	P- See response to NL comment

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		For instruments with Max > 100 t this portion may be reduced to 30 % of Max if the repeatability error is not greater than 0.3 e. The repeatability error has to be determined with a load of about the value where the substitution is made, by placing it 3 times on the load receptor."	
3.7.3	SA	The words "at verification" has been added to the heading, does this mean that substitution is not allowed for Type Evaluation testing?	Yes, it is only allowed for verification.
3.8.1	SA	It is not clear why there should be both discrimination and sensitivity tests for non-self indicating and self indicating instruments. Discrimination and sensitivity are essentially the same thing only being applied differently. The term "discrimination" is used for determining a self-indicating instruments ability to react to small changes of load while "sensitivity" has traditionally been used for the same purpose in the case of non-self-indicating instruments. The need to overcome any threshold on a non-self-indicating instrument is inconsistent with the design and principle of this type of instrument and is, therefore, unnecessary. In addition the words "with a slight impact" in the case of the minimum sensitivity test is vague. What is a slight impact? It is recommended that the traditional use of the terms "discrimination" and "sensitivity" be retained for self-indicating and non-self-indicating instruments respectively. It is also recommended clause 3.8.1 be amended as follows:- "3.8.1 Discrimination – Self-indicating instruments [digital & analogue] When a load of 1,4 times the actual scale interval is added to or	P- They are not the same thing: „Discrimination" is the ability of an instrument to react on a small load. "Sensitivity" is the ability of a non-self-indicating instrument to give a certain displacement of the indicating element (see 6.1). Not agreed P- Clear enouh, because there were no problems up to now P- See comments above P- See comments above

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		removed from the instrument at equilibrium the indication shall change by at least one scale interval. It is also recommended that clause 6.1 be amended as follows:- "6.1 Minimum sensitivity – *Non-self-indicating instruments* *When an additional load equal* to the value of the maximum permissible error for the applied load, but not less than 1 mg, is placed on the instrument at equilibrium it shall cause a permanent displacement of the indicating element of at least: 1 mm for an instrument of class I or II 2 mm for an instrument of class III or IIII with Max ≤ 30 kg, 5 mm for an instrument of class III or IIII with Max > 30 kg." See also 6.1	P- See comments above
3.8.2.1	NL	For practical reasons, we propose to enlarge the specified weights with a factor 100. So replace 1 mg with 100 mg and 5 mg with 500 mg. See also 3.8.2.2	P- New proposal which is not in accordance with vote
3.8.2.2	KR	This applies only to type examination and to instruments with ~~d ≥ 5 mg~~ d ≥ 10 mg. Must use (1/10)d weights, but a examination is impossible because ten 0.5mg is necessary, and weights doesn't exist in 1mg in practice hereafter if does 5mg	P- There seems to be a misunderstanding: for this test 1/10 d weights are not necessary. The reason for d ≥ 5 mg is, that on an instrument with d = 5 mg the additional load for this test can be realized with 1 mg weights. The additional load must be 1,4 x 5 mg = 7 mg.
3.8.2.2	NL	The remark *"This applies only to type examination and to instruments with d ≥ 5 mg."* should read: *"This applies only to instruments with d ≥ 5 mg."* The remark about type-examination should be moved to annex A or chapter 8. For practical reasons, we propose to enlarge the specified weights with a factor 100. So replace 1 mg with 100 mg and 5 mg with 500 mg. (see also 3.8.2.1)	P+ P- Not necessary, is already in chapter 8 P- See response to NL comment under 3.8.2.1

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
3.8.2.2	US	The U.S. recommends that the term "initial" should be deleted for clarity as follows: An additional load equal to 1.4 times the actual scale interval, when gently placed on or withdrawn from the instrument at equilibrium shall change the ~~initial~~ indication. This applies only to type examination and to instruments with d ≥ 5 mg.	P+ The reference "to type examination" has also been deleted because of clarification under 8.3.3
3.9	UK	What does "If not otherwise specified tests shall not be combined." mean? This is difficult to understand.	P+ We hope that the comma added after "specified" makes it clear now.
3.9.1	RO	We think that the reference to the previous draft of R76, with respect to the tilting of 2/1000 should remain.	P- Not accepted, because this was changed acc. to the proposals received, and the respective vote
3.9.1.1	AU	b) Suggest changing wording to "The tilt sensor shall switch-off the display or give an appropriate alarm signal ….". d) First sentence, change to "… or a Cardanic (gimbal type) suspension …". Is a freely suspended instrument (crane or hanging scale) intended to be covered by this point – or is it simply considered to be 'not liable to be tilted'?	P- It seems clear enough P+ The wording has been changed to read „…Cardanic (gimbal type) suspension ..."; crane or hanging scales are considered as not liable to be tilted (see amendment under 3.9.1.2 "Freely suspended…)
3.9.1.1	NL	Why has class II been excepted ? a): Delete the Note: *"If technical … "* This is not necessary and is likely to be misused. In our experience of type-approval testing we have always found it is technically possible to make the level indicator visible. Suggested new item 3.9.1.1 e: We suggest to add requirements (e.g. tilting 10%) for instruments provided with an automatic compensation device for the effect of tilting. (inclinometer).	The exception is only valid at no load. The previous version of R76-1 has not been changed in this respect. P- Not accepted, because this was introduced on request of several members P+ But instead of adding a new item, the following sentence has been added to b : "The automatic tilt sensor may also compensate the effect of tilting."

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
3.9.1.1.	PL	In Section b) we suggest to limit sensitivity of automatic tilt sensor (the value 2 % is for consideration), so: "If the instrument is fitted with an automatic tilt sensor the limiting value of tilting is defined by the manufacturer, but not less than 2 %. The tilt sensor shall release….."	P- Not accepted, because this was changed acc. to the proposals supplied, and acc. to the vote
3.9.1.1	UK	The term "Cardanic suspension" is used. It should be defined in Section T…. See also 4.18.1	P- see response to AU comment
3.9.1.1	US	The U.S. requests clarification regarding the proposing amendment to the first sentence in 3.9.1.1 Tilting. We interpret the existing requirements to mean that tilting test are conducted in according to the following diagrams:  ***or***  By adding changing "or" to "and", it appears that the number of tilting test are nearly doubled. The U.S. is concerned that there is no added benefit to testing for the effect of tilt in all eight directions.	P+ But we suggest to simply add an "a" : " ... of a lengthwise tilting and a transverse tilting ... " We hope that this clarifies that only 5 tests are necessary: one in the reference position and 4 in the directions shown in the upper sketch.
3.9.1.1 a. Note	US	An additional marking pointing to the location of a level indicator is unnecessary and provides little benefit to the customer, makes it difficult for a manufacturer to comply, and may be in conflict with sanitation requirements. The maintenance of the level condition is the responsibility of an instrument operator trained and knowledgeable in the operation of the instrument. Location on the level indicator should be part of these operating instructions. The location on the level indicator should also be defined in the R 76-2 report form and certificate.	

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		The U.S. recommends that 3.9.1.1 a. Note be amended as follows: Note: If technical reasons allow the level indicator to be fixed only in a "hidden" place (e.g., below the load receptor) this can be accepted if the level indicator is easily accessible to the user without tools, and if there is a legible notice provided on the instrument in a clearly visible place that points the user to the level indicator, or its location is defined in the operation manual, the OIML Certificate and OIML Test Report.	P- Not accepted, because in practice the user often does not have either of these "papers" at hand; this means that he normally does not know where a "hidden" level indicator is situated.
3.9.1.2	Secretariat	Class I instruments are most sensitive to tilting, therefore they must be fitted with a levelling device and a level indicator.	The wording of 3.9.1.2, first hyphen, has been changed as follows: „- Class I instruments must be fitted with ... but need not be tested because ..."
3.9.2	NL	Delete the (*) remark, this belongs to Annex A	P+
3.9.2.1	NL	Show temperature limits in the format as prescribed in 7.1.2. (replace the comma by "/").	P+
3.9.2.1	CECIP	In some countries working temperatures for using weighbridges outside may be lower than -10 °C or higher than +40°C. We guess that in such case suitable ranges outside -10°C or +40°C are required. If it is like that this should be mentioned.	P- See first sentence "If no particular working temperature is stated ..."
3.9.2.3	AU	We do not support the US proposal (a multiple range instrument – unless switched into a 'higher range', is effectively the same as a single range instrument and should comply with the same requirements). However our experience with compliance testing does suggest that manufacturers do have problems with ensuring compliance with the existing requirements for temperature effect on no-load indication. We are not convinced that this is a good justification for a relaxation of this requirement (it may just result in even worse performance being accepted). A more lenient approach to the current requirement could be achieved by decreasing the temperature 'for other classes' from 5 °C to 2 °C. Alternatively, if the requirement was to be relaxed we believe the appropriate way to do so would be on the basis of whether or not an instrument had a zero-tracking device (applying this to single range, multiple range and multi-interval instruments equally).	P+ The yellow marked text has been deleted, because 7 members (including the co-secretariat) had voted against the US proposal

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		So the requirement could perhaps say: • "For instruments fitted with a zero-tracking device, the indication at zero or near zero shall not vary by more than one verification scale interval (e_1 for multiple range or multi-interval instruments) … • For instruments not fitted with a zero-tracking device, the indication at zero or near zero shall not vary by more than two verification scale intervals (e_1 for multiple range or multi-interval instruments)…".	
3.9.2.3	CECIP	We cannot see any reason for the proposal to use the largest verification scale interval when assessing the temperature effect on no-load indication of multiple range instruments. Such instruments are state of the art. We are not aware of any problems associated with using the smallest verification scale interval in assessing the temperature effect on no-load indication, and the smallest verification scale interval is a valid method of use for the instrument and should therefore be examined. A zero tracking device as regulated in this standard is no safe alternative to replace the existing requirement.	P+ See response to AU comment
3.9.2.3	JP	The following part of US proposal is not acceptable. "For multiple range instruments with a zero tracking device, this applies to the largest verification scale interval of the instrument"	P+ See response to AU comment
3.9.2.3	RO	We suggest to keep point 3.9.2.3 unchanged because a small variation in temperature might lead to exceeding the permissible errors when placing on or removing a small load from the scale.	P+ See response to AU comment
3.9.2.3	SI	3.9.2.3 (US proposal): A change according to the US proposal would lead to a difference in metrology quality between instruments composed according the modular approach, which would still fulfil unchanged requirements of 3.9.2.3 (because R60 remains unchanged), and compact instruments tested against lower requirements for multi-interval/multiple range instruments.	P+ See response to AU comment
3.9.2.3	UK	[asks for comments]: The sentence "For multi-interval instruments and for multiple range instruments without a zero-tracking device this applies to the smallest verification scale interval of the instrument." would be safer with two commas added to make "For multi-interval instruments, and for multiple range instruments without a zero-tracking device, this applies to the smallest	P+ See response to AU comment

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		verification scale interval of the instrument." as at present it is not totally clear whether or not it applies to multi-interval instruments without a zero-tracking device. (We assume that as the next sentence applies to multiple range instruments with a zero-tracking device, We've put the commas in the correct place) We have no thoughts about the new sentence "For multiple range instruments with a zero tracking device, this applies to the largest verification scale interval of the instrument." Is there any logic in choosing the largest scale interval, or is it just arbitrary?	
3.9.3	RO	We suggest to take into account the requirement on the minimum operating voltage (when the instrument is automatically switched off at lower operating voltage) and the instruments with external power supply (AC).	P- Sorry, comment not fully understood
3.9.3	UK	Ambiguous. Does "minimum voltage to +20% of the voltage marked on the instrument (nominal voltage)" mean test at 20% of Vnom (i.e. 80% of Vnom) OR 20% higher than Vnom?	P+ See response to US comment below
3.9.3	US	This paragraph indicates that a battery-operated instrument should be tested with an input voltage of +20%. U.S. manufacturers have reported that some instruments may be damaged if tested up to the proposed limit. The U.S. is not aware of the justification for the proposed of 20% upper limit for DC operated instruments and recommends that the upper limit for battery-operated instruments be the same as instruments with a main power supply.	P+ See new 3.9.3 (voltage limits chosen according to OIML D11)
3.9.4.1	NL	Add heading "Creep". We propose to add: "*.... after placing the load* ***(and the instrument indicates or suggests a stable equilibrium)*** *and the indication observed ....*"	P+ P- Not accepted, because this is clarified in A.4.11.1
3.9.4.2	NL	Add heading "*Zero return*".	P+
3.9.4.2	US	The third paragraph infers that the automatic zero tracking device is disabled since it states that a multiple range instrument must maintain the "near zero" indication for 5 minutes after removing a load greater than Max_1.	

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		The U.S. recommends that the following language be added to paragraph 3.9.4.2 as follows: 3.9.4.2 The deviation on returning to zero as soon as the indication has stabilized, after the removal of any load which has remained on the instrument for one half hour, shall not exceed 0.5 e. For a multi-interval instrument, the deviation shall not exceed 0.5 e_1 On a multiple range instrument, the deviation on returning to zero from Max_i shall not exceed 0.5 e_i Furthermore, after returning to zero from any load greater than Max_1 and immediately after switching to the lowest weighing range, the indication near zero shall not vary by more than e_1 during the following 5 minutes. This requirement assumes that the zero-tracking device, if provided, is not in operation.	P- We agree, but this is already mentioned in A.4.11.2, so that it should not be repeated here.
3.9.4.3	CECIP	We would like to point out that R51 does not require endurance testing although the amount of weighing cycles with AWIs usually is much higher than with NAWIs. In R76 the test is limited already now to instruments with Max ≤ 100kg. A manufacturer takes care in the development of the instrument already that it is suitable for its purpose. Therefore we think the test is unnecessary. That will save time and costs. See also A.6	P- Not accepted according to vote
3.9.4.3	NL	Add heading "*Durability*". The sentence "*Adherence …* " should be moved to Annex A	P+ P- No change required by vote
3.9.5	NL	2nd paragraph: Replace *"Example"* with *"Acceptable solution:"* As this is not a strict requirement, we think this is not really suited to be included in formal legislation. Furthermore, we suggest to replace "*... is **too** great (A value ...*" by: *"... is **relatively** great (**In general**, a value ...*"	P+ But "Example" has been changed to "Note:" P+

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		Please make clear where in the start of the 3rd paragraph "*This limit …*" refers to. Is this limit the verification scale interval or the number of divisions?	P+ The wording has been amended and put at the end of the note.
3.10	NL	Referring to our general comment no. 4, this clause should be in chapter 8	P- Not accepted because of the vote
3.10.2.1	AU	We do not believe that the apportioning of 1 to an electronic indicator for Span Stability is appropriate. The apportioning of 1 implies that neither the load cell nor connecting elements contribute to the span stability of an instrument. It is likely that certain types of connecting elements (for example, where moving parts are involved) may be more likely to have span stability problems than more simple load application mechanisms. As R 60 does not include any provision for span stability, we accept that a p_i is not applicable for the load cell. However, we believe that 0.7 should apply for both the electronic indicator and connecting elements.	P- No change, because span stability concerns only electronic instruments
3.10.2.1	CECIP	**Table 7:** We understand with connecting elements a collection of junction boxes, loading assemblies and other mechanical parts are meant. The fixed value of p_i= 0,5 for connecting elements is in our opinion too high for companies using more accurate elements. Therefore we suggest having the alternative for creating the facility to 'certify' by example junction boxes and so on that with more qualified units a better accuracy could be achieved.	P- We agree but we think a change is not necessary, because a lower p_i is already possible; the table gives only an example of an acceptable solution
3.10.2.1	NL	4th par.: We propose to allow a minimum value of the fraction p_i to be as small as 0.1 for digital devices. 5th par.: Mention that by testing, a smaller value of p_i for the examples mentioned can be achieved here.	P- No change, because there are no problems for digital devices with p_i = 0 P- See response to CECIP comment
3.10.2.1	US	In the third paragraph, indicated by the first hyphen, the term "digital" is ambiguous. Because of this, the application of the apportioned error may be incorrect because the module may have analogue components with digital	

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		outputs. The U.S. recommends adding “purely,” as in paragraph 3.10.2.2, as follows: The fraction p_i shall be chosen by the manufacturer of the module and shall be verified by an appropriate test, taking into account the following conditions: - For purely digital devices p_i may be equal to 0.	P+
3.10.2.2	NL	2nd par.: We suggest to delete the 2nd line “They need neither … “	P- No change for the sake of clarity
3.10.2.2	UK	Replace the word 'neither' with 'not'. This is not acceptable because the relevant IEC standards have a different pass/fail criteria to R76. The tests in R76 generally require the MPE to be within 1 e. However, the IEC standards allow the manufacturer to define the pass/fail criteria as follows: *A = No performance degredation is allowed* *B = Performance degredation is allowed only during testing - self recovery is expected. A change in state or loss of data is not permissible* *C = Performance degredation can occur and remain until the user/operator resets the EUT* So, under A no errors are allowed, under B no errors are allowed, **but under C, errors greater than 1 e are allowed.**	P+ P- The term “significant fault” and the pass/fail criteria are clearly defined in T.5.5.6 and 5.1.1 The conformity to IEC standards is accepted only if tests have been performed to at least the same level as defined in this recommendation.
3.10.3	UK	This is not acceptable because the relevant IEC standards have a different pass/fail criteria to R76. The tests in R76 generally require the MPE to be within 1 e. However, the IEC standards allow the manufacturer to define the pass/fail criteria as follows: *A = No performance degredation is allowed* *B = Performance degredation is allowed only during testing - self recovery is expected. A change in state or loss of data is not permissible*	P- See response above

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		C = Performance degredation can occur and remain until the user/operator resets the EUT So, under A no errors are allowed, under B no errors are allowed, **under C errors greater than 1 e are allowed.** The words “protective interface” have been added, and this is the first use of the word “protective” in this guide, but this is not included in the Section T Terminology, so many people will not know what it means. It is defined later on in Section 5.5.2.2. Either it should be defined in Section T, or a reference to Section 5.5.2.2 should be put into Section 3.10.3.	P+ see new section T.2.3.6
3.10.4.2	NL	1st indent: The word *“and”* implies that for a family, we always need to test 2 instruments. In case there is a variant that combines these 2 characteristics, there is no need to test 2 instruments. Please insert text to make this clear.	P+ See addition “If a variant has both characteristics, one EUT may be sufficient” in first hyphen
3.10.4.2	US	The second and third bulleted items indicated by a hyphen contain the term “normally.” The U.S. is concerned that “normally” is a very subjective word and recommends that it be removed from both sentences.	P+ “normally” has been deleted in the 2nd and 3rd para
3.10.4.4	AU	It is desirable for all testing to be done on one particular sample of EUT. However, some testing authorities have found that testing time can be reduced if two (or more) samples of a particular EUT are supplied, with testing split between them. To control this and retain confidence in testing, we suggest the following (or similar) be added to 3.10.4.4 or to the ‘Remarks to the selection’ in 3.10.4.5. “Related metrological features shall always be tested on the same EUT. For example, it is not acceptable to test the temperature effect on no-load indication on one instrument and the combined effect (3.10.2.1) on a different instrument. A suggested practical division of ‘related functions’ is: Combined effect, creep, temperature effect on no load indication, span stability. Damp heat Electromagnetic immunity Other electrical testing (ESD, power supply variation, busts, short time	P+ An example has been added after 1st sentence of 3.10.4.4: "...as many as possible in the same EUT. For example, it is not acceptable to test the temperature effect on no-load indication on one EUT and the combined effect (see table 7) on a different one. Variations in..." And the last sentence of 3.10.4.4 has been amended by „... under the responsibility of the testing authority.“

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		power reduction) Functional testing (e.g. checklists, software related features). It is important to ensure that the combined testing of a number of EUTs provides confidence that any particular instrument of the approved type will meet all the applicable requirements."	
3.10.4.4	UK	The phrase "instruments functions" should presumably be either "instrument's functions" (if referring to one instrument) or "instruments' functions" (if referring to more than one), but it might be easier to change it to "instrument functions"!	P+
3.10.4.5	JP	For clarity, please move "Note" after Table 8, before "Remarks to the selection:"	P+
3.10.4.5	NL	Tables 8 and 9 are not in line with the definition of family. Normally a family comprises 1 type. We propose to delete 1 family or combine the variants as 1 family.	P- No change, because the definition in T.3.4 is in line with OIML Publication P1
3.10.4.5	UK	In Table 9, I'm not sure where the lower limits of the Max values of 50 g for the Class II and 0.25 kg for the Class III come from. From Table 3, the smallest number of divisions for the Class II instrument with e = 0.01 g is 100 (not 5000), giving a Max of only 1 g (not 50 g). From Table 3, the smallest number of divisions for the Class III instrument with e = 0.5 g is 100 (not 500), giving a Max of only 50 g (not 0.25 kg). Is there some other rule that I've missed? Alternatively, shouldn't they just be the same as in Table 8 (200 g and 1.5 kg)? In "Remarks to the selection", for variant 2.4, we need to precisely define which tests should and should not be performed i.e. do not use the term 'such as' and 'etc'.	P+ Table 9 has been corrected: Family 1: Max 1 g … 2000 g Family 2: Max 50 g ... 60 kg P+ We hope that the wording „…to perform additionally some important tests such as weighing test, temperature, ... repeatability, etc.. It is ... " is better.
4.1.2.4	CECIP	**Note:** The wording in this clause suggests that the identification requirement (person or body that has entered the data) is part of the software, this obviously is not right. The verifier, be it an authorised officer or a manufacturer should mark the reference data and identify it. If a label is removed and a new one put on, the authorised person carrying out in-service control of the instrument would be	P+ See changes and amendments in 4.1.2.4

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		able to check that the label bears the mark or identity of an official verification. If it does not then it is the responsibility of the user of the instrument.	
4.1.2.4	CH	a) Acceptable technical solution For practical reasons we would recommend to include the procedure (counter number comparison) not only in the manual but also in type approval itself.	P+ At the end of the acceptable technical solution the wording " ... in the manual and in the OIML certificate with test report" has been added.
4.1.2.4	UK	Apostrophe missing in Part b: "...the instruments main plate..." should be "...the instrument's main plate...". Also (near end of section) "the weighing instruments display" should be "the weighing instrument's display". Not sure about the "are" in that sentence! Part b: what does "resp." mean? I guess it might be "with respect to", it would be better not to use it. a. "Acceptable solution" the wording 'at the modified instrument itself' is not clear. b. The meaning of part b. 'Software securing methods …' is not clear.	P+ P+ "resp." has been replaced by "or" P+ "itself" has been deleted P+ See new wording
4.1.2.4	US	b) The paragraph states that the serial number (or other identification of the instrument) shall also be included in the medium that also contains the event counter. The U.S. believes that storing the serial number in the medium that stores the event counter data is not necessary for instruments where the event counter data is stored within the instrument. Where event counter data is not stored or contained within the instrument, the acceptable solution should allow for other forms of identification sufficient to identify the specific instrument location. The requirement should also state that the data for preset controls is not to be confused with the long-term storage of legally relevant data in 5.3.5. Data Storage Devices (DSD).	P- No change, because this is a securing against the replacement of the whole electronic component or device. P+ See new wording
4.1.2.6	UK	Requires an amendment for NAWIs that weigh aircraft. It is normal practice that these devices are flown round to different airports and their usage requires	P- Not accepted, because these are very special applications not being under legal control in many

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		the local gravity value to be entered. The gravity value selected should be printed out with the weight value. Suggest this paragraph carries an additional line as follows: "NAWIs for weighing aircraft only are excluded from this requirement provided the gravity figure is printed together with the weighing result"	countries. In special cases deviations from R76 are possible anyway.
		Why the hyphen in “de-vice”?	P+ Hyphen deleted
4.1.2.6	US	“de-vice(s)” should be not be hyphenated.	P+
4.2.2.2	NL	We propose to include a requirement for the minus sign: *“In case of an indication below zero, a minus sign shall be displayed at the left side of the figures. This minus sign shall be about halfway between the top and the bottom of the other figures.*”	P- No change, we should not overregulate
		Last par.: We do not agree with the fact that the requirements only apply to the smallest (partial) weighing range. The requirements should apply to all weighing ranges.	P+ This para belongs to the 5th para and has been moved to the end of 4.2.2.2
4.2.2.2	UK	What does this really mean?	The problem is not really understood
4.2.3	AU	Last sentence: The word ‘significantly’ is not sufficiently clear. We suggest setting a definite value. For example, “Indications below zero shall not be less than for multiple range or multi-interval instruments, unless a tare device is in operation.”	P+ See new wording Remark concerning “indications below zero”: In principal, these cannot be allowed because there are no mpe’s defined. For practical reasons, however, a negative indication down to –Min can and should be tolerated.
4.2.3	CECIP	We do not understand the reason for the remark "Indications significant below zero are not permitted unless a tare device is in operation." What is significant and what does this help in use of the instrument?	P+ See new wording, and remark made under AU above
4.2.3	SA	3rd Par: “For multi-interval instruments…” the words “no indication” means blanking out which is not the intention, as the scale continues to indicate using the next larger e value. Suggestion: “For multi-interval instruments there shall be no indication using e_i above….”.	P+

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
4.2.3	US	The last sentence in 4.2.3 states that indications significantly below zero are not permitted unless a tare device is in operation. The U.S. is concerned that the term "significantly" is very subjective. Additionally, the only acceptable exception in the proposed language is for instruments with tare devices in operation. If the proposed requirement is intended for self-indicating mechanical instruments, the requirement should allow for the use of electronic instruments that have a clear and unambiguous gross weight identifier. The U.S. recommends that the last sentence in 4.2.3 be deleted.	P- See remark made under AU above
4.3	SA	Heading should include printing as for Clause 4.4. and then a section on printing (including stability of equilibrium) similar to Clause 4.4.5. should be added.	P- No change necessary, because printing is now included in the term "indication" (see new T.1.3)
4.4.2	CECIP	We have big problems to understand requirements, testing and tolerances especially in respect to zero and tare operations and testing under "continuous disturbance". - Is it meant that the test of temporary disturbance is taken with the "automatic release of the functions print, data storage, zero setting, tare setting in combination with the stability criteria" and that in all cases the deviation shall not deviate more than 1e? - We have no idea for an objective test for "continuous disturbance" especially during 8.3.3. If testing is required in 8.3.3 it should be easy and give no way for discussions when an instrument is refused. See also 8.3.3 and A.4.12	P+ See new wording (Remark: the criterion on stable equilibrium shall also be reached at an automatic release or at storage of the print command.) Yes, that is meant. The deviation of 1e is valid only for the printout and data storage. The stable equilibrium criterion for zero-setting and tare balancing shall be such, that the relevant requirements can be met (0,25 e). P+ We agree, therefore the stable equilibrium test has been deleted from 8.3.3 (tests at initial verification); instead A.4.12 has been amended to include a "worst case testing" at type examination based on the documentation supplied by the manufacturer.
4.4.2	NL	2nd indent: The new wording of this requirement means an increase of the allowed error. Example with final weighing value = 200e: New requirement: allowed values: 199e, 200e and 201e (200e $\pm$ 1e) Old requirement (4.4.5): allowed values: 200e and 201e or 199e and 200e (200e + 1e or 200e - 1e)	No, but for the sake of clarity the explanation "(ie. two adjacent values are allowed)" has been added in the 1st hyphen.

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		(200e + 1e or 200e - 1e) We propose to keep the old requirement: *"… weighing values do not indicate more than 2 adjacent values, 1 being the final weighing value."* 4th par.: It is not possible to reach stable equilibrium under continuous disturbance. Delete the words "*continuous or*".	P- No change, because the case „continuous disturbance" is necessary for instruments, which store the print command and print after a certain time period without checking for stable equilibrium; thus wrong weighing values are possible if the stable equilibrium has not yet been reached.
4.4.2	US	There is a "." missing after the first bulleted item indicated by a hyphen.	P+
4.4.6	SA	Reference to 4.4.5 is incorrect.	P+ The last sentence is deleted
4.5.1	NL	Note: We suggest to delete the note. In case the note is not deleted: - Replace "*This provision*" by "*These provisions*", as the line above mentions 3 provisions. - Delete the exception. As besides the 4 classes, there should be preferably no further distinction depending on the application. Furthermore: is for instance the weighing of garbage by the community a "commercial transaction"? 4th par.: Change "*… device if tests show that the instrument …*" to "*… device if the instrument …*". Reason: tests need to be separated from requirements.	P- No change, no problems up to now P+ P- No change according to vote; of course, weighing of garbage is a commercial transaction P+
4.5.4	CECIP	We suggest to change: "...if it cancels any previous tare operation" to "...if it cancels any previous tare weighing operation". This requirement doesn't make sense for preset tare if the user weighs several similar products for example with a price labeller.	P- No change, because after releasing a zero-setting on a semi-automatic instrument, the display shall show zero and nothing else. This does not affect a zero-tracking device which may be in operation all the time.
4.5.4	NL	1st par.: Improve wording by changing "*… semi-automatic zero-setting **device**, and **a** semi-automatic …*" to "*… semi-automatic zero-setting and semi-*	P+

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		automatic …"	
4.5.7	NL	2nd par: What is the "the actual zero value"?	The actual zero value is the value after zero-setting or switching on.
4.6.5	AU	For consistency with 4.6.11, change the first Note to read "NET may be displayed as "NET", "Net", "net" or "N".	P- No change, because in the display the marking must be clearer than in the printout.
		The sentence above the acceptable solution mentions "NET and T" whereas the basic requirement does not refer to T. This should be changed to say "It is permitted to replace the symbol NET by complete words …".	P+ In the para above the acceptable solution „and T" has been deleted.
		In the acceptable solution regarding mechanical tare adding devices, the reference to displaying the letter "T" should be changed to "N" so that this is consistent with instruments with digital indication.	P- No change, because for mechanical instruments the "T" is shown near the tare device and not near the display with the net-value, therefore an "N" would not be correct.
4.6.11	AU	(a) We believe that the following should be included at this point. "For a designation by a symbol, only "G" or "B" are permitted where national regulation allows." As "B" would not be acceptable in Australia, this would mean that manufacturers would need to provide for a selection of either "G" or "B" to be made at or prior to initial verification.	P- No change, as this would again lead to country specific instruments
		(b) In the first example, the reference to "After releasing tare-balancing" should be "After engaging tare-balancing". Also, the "Loading with tare load" of 2.729 kg is shown as having been rounded down and indicated as 2.728 kg (i.e. with e_2 = 2 g). It would also be acceptable for this value to be rounded up to 2.730 kg, but the example may imply that this is unacceptable. In the second example we feel that it would be more useful to have the preset tare value in the second scale interval.	P- No change, but refer to new examples in 4.6.12
		3. Instrument with a preset tare device and one indicating device:	P+ See new examples in 4.6.12

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		Unloaded indicated value = 0.000 kg Loading with gross load 14.373 kg rounded and indicated tare value = 14.370 kg Input of the preset tare value 4.617 kg indicated value during input = 4.617 kg rounded and temporarily indicated tare value = 4.618 kg with sign "PT" (or 4.616 kg) (internal calculation is 14.370 – 4.618 (or 4.616) = 9.752 (or 9.754) rounded (to e_3) and indicated net value = 9.750 kg with sign "PT" Possible printouts acc. to 4.6.11: a) 14.370 kg B/G 9.750 kg N 4.618 kg PT (or 4.616 kg) b) 14.370 kg 9.750 kg N 4.618 kg PT (or 4.616 kg) c) 9.750 kg N 4.618 kg PT (or 4.616 kg) d) 9.750 kg (if allowed by 4.7.3) In the third example the possible printout should include N, NET, Net or net (as well as C). Possible printouts acc. to 4.611: Gross 12.620 kg Tare 11.835 kg Net 2.730 kg C	
4.6.11	CECIP	Because of rounding there exist two possibilities to show Gross, Net and Tare in a printout. One gives "mathematical accuracy" of the displayed parts. The other gives "weighing accuracy" of the parts. Both results may differ because of rounding even for single interval instruments. Are both possibilities included?	P+ See new examples in 4.6.12
4.6.11	JP	Please standardize the decimal point with period "." rather than comma "," in this document.	P- No change, because both dot or comma are allowed, and in this document a comma is the prefered symbol for the decimal "point"
4.6.11	KR	„ 4.6.11 (*) " leads to confusion. Proposal: (*) change to footnote	P+ See new examples in 4.6.12
4.6.11	NL	Example 1 a): Example 1 a indicates that the addition N + T = B needs not to be correct for the printout. This is not correct; a user will not understand this. See also example 1 at the end of these comments. The example refers to a tare-balancing device, however the tare value is	P+ The example has been deleted and replaced by new ones in a separate section 4.6.12

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		printed. In that case it is a tare weighing device (T.2.4.7.1 &.2). Examples: We suggest to move these examples to an informative annex: **<u>Examples of calculations of Gross, Net and Tare for a NAWI.</u>** **Round off** Specifications NAWI: Max 30 000 kg e = 10 kg Load on the scale = 10 007 kg Taring gives T= 10 010 kg, N= 0 kg Adding 10 007 kg gives N = 10 010 kg Internal counts Print-out / Display rounded to e Print-out / Display B = N + T T = 10 007 kg N = 10 007 kg ---------- B = 20 014 kg T = 10 010 kg N = 10 010 kg ---------- B = 20 010 kg T = 10 010 kg N = 10 010 kg ---------- B = 20 020 kg If all internal values are rounded to e (column 2) the addition is not correct. This	

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		will lead to misunderstandings for the user. From the current R76 it is not possible to extract which value needs to be calculated. Because the user has seen N and T on the display and because the addition needs to be correct the third column is correct. The third column complies with 3.6.3. Relevant requirements: T.2.7.4.2 Tare-weighing device = Tare device that stores the tare value and is capable of indicating or printing it whether or not the instrument is loaded. 3.5.3.3 The mpe apply to the net value for every possible tare load, except preset tare values. 3.5.3.4 The mpe for a tare-weighing device are the same, for any tare value, as those of the instrument, for the same value of load. 3.6.3 The difference between the display and the print-out should be zero. 4.6.2 The scale interval of a tare-weighing device shall be equal to the scale interval of the instrument for any given load. **Multi-range** Specifications NAWI: Max1 6 000 kg e1 = 2 kg Max2 15 000 kg e2 = 5 kg Weight on the scale: 5122 kg Taring gives T= 5122 kg, N = 0 kg Adding weight as soon as B > 6000 kg the tare needs to round to the next e, so T = 5120 kg (4.6.2) If N = 2115 kg, than B = 7235 kg T = 5120 kg N = 2115 kg --- B = 7235 kg	

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		Relevant requirements: T.2.7.4.2 Tare-weiging device = Tare device that stores the tare value and is capable of indicating or printing it whether or not the instrument is loaded. 3.2 On multiple range instruments, each range is treated basically as an instrument with one range. 3.5.3.3 The mpe apply to the net value for every possible tare load, except preset tare values. 3.5.3.4 The mpe for a tare-weighing device are the same, for any tare value, as those of the instrument, for the same value of load. 3.6.3 The difference between the display and the print-out should be zero. 4.6.2 The scale interval of a tare-weighing device shall be equal to the scale interval of the instrument for any given load. 4.6.7 The tare operation shall be effective also in the greater weighing ranges, if switching to to a greater weighing range is possible while the instrument is loaded. 4.10 Automatic change over is allowed from a smaller to the following greater weighing range when the load exceeds the maximum gross weight of the range being operative. **Multi-interval** Specifications NAWI: Max_1 6 000 kg e_1 = 2 kg Max_2 15 000 kg e_2 = 5 kg <u>Situation 1:</u> Weight on the scale 5122 kg Taring gives T = 5122 kg, N = 0 kg N = 2112 kg than B = 7234 kg T = 5122 kg N = 2112 kg ---------- B = 7234 kg (it is not clear from R76 if rounding has to be on e_1 or e_2!)	

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		Situation 2: Weight on the scale 5122 kg Taring gives T = 5122 kg, N = 0 kg N = 6115 kg than B = 11237 kg T = 5122 kg N = 6115 kg ---------- B = 11237 kg (it is not clear from R76 if rounding has to be on e_1 or e_2!) Relevant requirements: T.2.7.4.2 Tare-weiging device = Tare device that stores the tare value and is capable of indicating or printing it whether or not the instrument is loaded. 3.3.4 Requirments concerning the ranges of a multi-interval instrument apply to the net load, for every possible value of the tare. 3.5.3.3 The mpe apply to the net value for every possible tare load, except preset tare values. 3.5.3.4 The mpe for a tare-weighing device are the same, for any tare value, as those of the instrument, for the same value of load. 3.6.3 The difference between the display and the print-out should be zero. 4.6.2 The scale interval of a tare-weighing device shall be equal to the scale interval of the instrument for any given load. **Two weighings** With a weighbridge the N value will quite often be calculated out of 2 weighings. First the vehicle is weighed when loaded, the vehicle is unloaded and the empty vehicle is weighed for the second time. The difference is the weight of the delivered goods. Specifications NAWI: Multi-range scale Max1 1 500 kg e1 = 0.5 kg	

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		Max2 3 000 kg e2 = 1 kg Situation1 Situation 2 First weighing: 2345 kg 2345 kg Second weighing: 1234.5 kg 744.5 kg --- Netto 1110.5 kg 1600.5 kg Because this is always a calculated Net value there need not to be a relation to the specifications of the scale. **Preset tarra** Example: PT 1000 kg B 800 kg --- N -200 kg If tare is operated what should happen or what is possible?	
4.7.3	NL	1st par.: It is not correct to apply 4.6.5 completely. The 4th paragraph of 4.6.5 (“*This is not required …”*) should not be applied.	P+
4.8.1	NL	2nd par.: The term “*preweigh*” position is not explained. Please explain here or in the chapter Terminology.	P- No change, the term is rather specific and no problems have been experienced up to now
4.11.5	UK	Should “Examples for” be “Examples are”?	P+ The wording has been changed as follows: “Examples for - weighing modes are: weighing ranges...” - weighing mode inoperative are: calculated ...”
4.11.5	US	The U.S. supports the concept of selectable weighing modes however, - we have concerns with the statement that the instrument can be switched back to the normal weighing mode “at any time”;	P- We think that further restrictions and guidelines are not necessary; it is obvious that such functions have to be appropriately described in the documentation

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		- the automatic selection of a mode may not be suitable in all instances and additional guidelines should be provided regarding the manual or automatic selection of modes; and - the list of examples for weighing modes and weighing mode inoperative should include additional examples of instrument functions such as preset tare setting, calibration, configuration, and temporary automatic partial power and or display shutdown mode to conserve battery power or prevent damage to the display in periods on non-use. For example, the operator should not be able to select a combination of platforms from a single platform mode unless the additional platforms are at a gross zero-balance condition. In another example, the zero integrity of the instrument must be protected when automatically switching from an inoperative weighing mode to a normal weighing mode. The U.S. also requests clarification that some functions such as preset tare determinations and other statistics may be conducted in the normal weighing mode provided that these functions do not interfere with the "real time" indications of mass and, if applicable, unit price and price to pay. The U.S. recommends that language be added to state that if a continuous zero indication is not provided in the "weighing mode not in operation," an effective means shall be provided to inhibit a weighing operation or to return to the normal weighing mode when the instrument is in an out-of-balance condition.	supplied by the manufacturer. P+ See amendments in 4.11.5 P+ We think these requests have been properly reflected by adding the following two paragraphs at the end of 4.11.5: "When returning from the weighing mode inoperative to the normal weighing mode, the actual weighing value may be displayed. When returning from the switch-off condition (display or instrument switch-off) to the weighing mode, zero shall be displayed (automatic zero- or tare-setting). Alternatively the actual weight value may be displayed, but only if the correct zero position has been automatically checked before."
4.13.6	SA	Is the intention of the 1st Paragraph that scales not used for self service applications must have two sets of primary indications, one for the vendor and one for customer? If yes, this must be made more clear.	P- Two sets are necessay, but this is sufficiently clear; therefore no change
4.13.11	US	The U.S. agrees with the intent of the proposed language and suggests that the last sentence be reworded as follows: If a price-computing scale is used as a self-service instrument ~~one,~~ then the requirements in 4.14 must be met ~~too~~.	P+
4.14.3	KR	4.14.3 Price computing instrument ~~*The unit price is restricted to Price/100g or Price/kg*~~	P- No change; there seems to be a misunderstanding

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		This sentence is contrary to the above sentence. Proposal: 4.14.3 Price computing instrument	
4.14.3	UK	This has been changed from "weight" to "mass", which might (not sure!) be right, but "weight" is used in lots of other places in this document. Are we sure we know which we mean, and are we using them consistently?	P- No change, mass is correct, see also T.1.2.8
4.14.4.2	JP	What does "provisions of 4.15.4" indicate?	P+ Reference has been changed to "4.14.4"
4.18	CH	Warm-up procedure: It would help to clarify the point to add an example where the hydraulic lifting system has an influence on the instrument.	P- For clarification we have added, however, the term "weighing" so that it reads "... involved in the weighing process"
4.18.1	CECIP	When the power supply breaks down during a weighing sequence, zero setting or a tare balancing operation causes a loss of the weighing results so far. We suggest making a zero setting or a tare balancing operation only applicable after a release by the operator. The remark "The OIML … at verification" as mentioned under "Where an automatic tilt sensor …" is applicable as well under "Where a Cardanic suspension …".	P- No change, because after movement of the vehicle it may have a totally other tilting, and the zero point may have changed due to tilting. If there were no zero-setting or taring, the weighing results could be outside the mpe. Tare-balancing is always possible. P+ The last sentence of the 6th para has been separated and written as an 8th para, because this is also applicable for a Cardanic (gimbal type) suspension. (see also AU comment on 3.9.1.1 d)
4.18.1	NL	According to our opinion all aspects in 4.18.1 are also relevant in enclosed locations. An example: fork lift trucks with weighing instruments are used in the fish auction (fish market), being indoors with a sloping floor (to let the water flush down). Therefore, there is no need to distinguish between 4.18.1 and 4.18.2. As a consequence 4.18, 4.18.1, and 4.18.2 can be combined to one sub clause. 5th par.: Replace *"No. 5.3.5 …"* with *"Clause 5.3.5 …"*. 6th *par.*: Remove "*shall be submitted..... at verification*".	P+ A respective footnote (*) has been added after 4.18.1 P- Not accepted; the separation is useful, because 4.18.1 and 4.18.2 describe totally different instruments. P+ But instead simply "No" has been deleted P- Problem solved by separation of 6th para and new 8th

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		Referring to our general remark number 4, we are in favor to move this information to chapter 8 And replace “OIML Certificate” by “Test Report” 7th par.: Also refer to our previous remark (6th par.): Add on an appropriate place in clause 8 that in case of a cardanic suspension, the test certificate shall include a description of the tilting tests to be performed at verification.	8th para P+ P+
4.18.1	SA	2nd Par: Does not seem practical as if a vehicle picks up a load and moves to a level location before weighing it cannot be zeroed after this movement, as it will be loaded. If it is meant moving of an empty vehicle add the word “empty”	P- See response to CECIP comment above
4.18.1	UK	Define "cardanic suspension". See also 3.9.1.1	P- „Cardanic suspension” with the addition “(gimbal type)“ is clear enough (see comments and responses to sections 3.9.1.1 and 4.18.1 above)
4.19	NL	There is one item to which I want to draw your particular attention : In the notes to clause 4.19 you stress that it is not justified to add subsequent measurements of axle or wheel loads to achieve the total mass of the vehicle. We fully agree with this opinion and in the enclosed comments, we only suggest to change the wordings a little bit . But I hope you are informed that in the draft OIML Recommendation “Automatic instruments for weighing road vehicles in motion” (4th CD, distributed 10 December 2003, secretary TC9/SC2 NWML, Mr. Morayo Awosolla), it is “promoted” to add subsequent readings of an axle weigher in order to measure the total mass under legal control! In the past, we informed this secretary several times in vain that we do not agree with this approach. But, even more important, we think that it is absolutely wrong when there would be such a contradiction between 2 OIML Recommendations ! Therefore, we suggest you to contact the secretary of OIML TC9/SC2 about	P+ Heading of 4.19 has been changed (see also response to NL comment on T.1.2.12) Yes, we are aware of that, see our response below

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		this particular matter. Referring to our general remark number 4, we are in favor to move the first 2 paragraphs to chapter 8. As the axle/wheel load meter should not be used for the determination of the mass (weighing), we would prefer this name “axle or wheel load meter” rather than “axle or wheel load weigher” or “weighbridge” (in this case). Furthermore, the 2nd note is in fact a clarification of the first one. Therefore we prefer to combine the 2 notes as follows: Note*:* *Groups of associated axle or wheel load meters may only be used for* determining *the total load of the vehicle if all wheels are supported simultaneously.* *Sequently determining the axle or wheel loads using an axle or wheel load meter is not considered as an appropriate means to determine the total mass of a road vehicle, railway wagon, etc.* *(The total mass may be calculated from wheel or axle loads only to obtain a rough idea of the mass, but this is not considered as being suitable for weighing subject to legal control).* *It is not justified to add sequential readings of axle or wheel load meters because during the measurements, the vehicle itself (being the load) forms a link between the instrument and the fixed environment.* *This will lead to additional unpredictable effects on the measuring results:* • *caused by the measuring instrument that may exceed the error limits because of lateral forces,* • *on part of the vehicle by different transient behaviour and friction within the axle suspensions,* *on part of the ramps if there are different levels between the measuring instrument and the ramp that could lead to varying distribution of the axle or wheel load.*	P- P+ Please refer to our proposed amendments to the first and second note in 4.19

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
4.19	UK	first Note: The word “sequently” should be “sequentially”. second Note: Insert 'axle' between 'single' and 'or' in the following: “When using single or wheel weighers.	P+ P+
4.20 (proposed new clause)	NL	Proposed new clause: Declare some requirements to be not necessary in order to give more freedom for instruments used for medical applications.	P- Refering to section 2.3, 2nd para, we believe to have sufficient freedom. However, we encourage all members to supply their view and make proposals if a new chapter 4.20 is considered necessary
5	US	The U.S. requests that references to the clauses could be titled for the benefit of readers that may not be familiar with the term “clause” as used in this recommendation as follows: In addition to clauses 3 Metrological Requirements and 4 Technical Requirements for a Self- or Semi-indicating Instruments, an electronic instrument shall comply with the following requirements.	P+
5.1 and 5.2	UK	Detecting and acting on significant fault. How does an instrument detect that a disturbance has been applied and that a weight deviation of >1 e has occurred? If the test/check cannot be performed then why have it?	P- No change, no problems experienced up to now. There are a number of checking facilities available to detect a significant fault.
5.1.3	NL	Referring to our general remark number 4, we are in favor to move this clause to chapter 8 or Annex A	P- There was a clear vote for not changing the structure
5.3.1	UK	In the new phrase “...for example screen-, matrix-displays, etc”, the use of the hyphen after “screen” might be grammatically correct, but wouldn’t it be less confusing just to put “...for example screen-displays, matrix-displays, etc”?	P+
5.3.3	NL	Referring to our general remark number 4, we are in favor to move this clause to chapter 8 or Annex A	P- There was a clear vote for not changing the structure
5.3.4	NL	Referring to our general remark number 4, we are in favor to move this clause to chapter 8 or Annex A	P- There was a clear vote for not changing the structure
5.4	NL	Referring to our general remark number 4, we are in favor to move these tests to chapter 8 or Annex A	P- There was a clear vote for not changing the structure
5.5.1	CECIP	We do not understand the reason that embedded software in instruments cannot be modified. There already exist safe ways to download and secure	P+ 3rd line of the 1st para has been changed to read: ”...or by other means after securing and/or

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		cannot be modified. There already exist safe ways to download and secure afterwards recognizable software. Therefore a type-approval body should have the possibility to accept such means if they are sure that security is granted. We have to take the quick progress in technology into account.	" ...or by other means after securing and/or verification. "
5.5.1	US	U.S. manufacturers have reported that modern weighing instruments include the use of flash technology in which software can be modified and uploaded. The proposed language in 5.5.1 appears to prohibit existing technology that is frequently used to update their products. Additionally, the U.S. is concerned with the last sentence in this section that states, "The software identification shall be easily provided by the instrument." The use of the term "easily" is too subjective. The U.S. recommends that the last sentence be amended as follows: The software identification shall be ~~easily~~ provided by the instrument and listed in the OIML certificate. Acceptable solutions may include one or more of the following: - A clearly identified operation of a physical or soft key, button, or switch. - Continuously displayed software identification. - Software identification displayed during the cycling of power to the instrument. Clear instructions viewing the software identification marked on or displayed by the instrument.	P+ We hope that the problem is solved by our response to the CECIP comment above. P+ Accepted with modifications
5.5.2	SA	Table 11, column 3: "Necessary tests": the word "shall" is used in Item 1, but "should" is used in Item2, which makes it not mandatory to use the maximum possible configuration. Suggest: Change Item 2: the word "should" to "shall" Table 11, column 4: "Documentation": the type of PC is described in the documentation, if components in the PC change, is re-approval required?	P+ changed to "shall" Yes (generally) for category 1, Yes (only power supply) for categories 2 and 3, No (provided general description remains valid) for categories 4 and 5

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
5.5.2	US	U.S. manufacturers have stated that many of their instruments incorporate several components such as mother boards, interfaces, memory, etc., that are common with personal computers and request that this section be clarified to recognize this practice. Additionally, they request clarification regarding the types of software subject to this section (metrologically significant, legally relevant, and software used in communication, interface, device driver, etc.). The U.S. offers the following amendments to the proposed section as follows: 5.5.2 Personal computers, instruments with PC components, and other instruments, / devices, modules, and elements with programmable or loadable metrologically significant and/or legally relevant software. Personal computers and other instruments/devices with programmable or loadable software may be used as indicators, terminals, point-of-sale devices (POS), data-storage devices or peripheral devices if the following additional requirements are met: Note: Although these devices may be complete weighing instruments with loadable software or PC-based modules and components, etc. they will in the following simply be called "PC".	P+
5.5.2.1	NL	Table 11: Referring to our general remark number 4, we are in favor to move the tests and documentation to chapter 8 or Annex A We propose to delete the abbreviation *EMC* as it is not used. Change *ADC* to: *AD*: analog data processing device (is defined)	P- No change, no vote for changing the structure P- „EMC“ is used in column 5 and it is correct; sometimes “EMI” has been used but this has been substituted by “EMC” in the entire document P- ADC is correct; a reference to the new Figure 1 has been added
5.5.2.1	UK	This is not acceptable because the relevant IEC standards have a different pass/fail criteria to R76. The tests in R76 generally require the MPE to be within 1 e. However, the IEC standards allow the manufacturer to define the pass/fail criteria as follows: *A = No performance degredation is allowed*	P- See our response to comment on 3.10.2.2

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		B = Performance degredation is allowed only during testing - self recovery is expected. A change in state or loss of data is not permissible *C = Performance degredation can occur and remain until the user/operator resets the EUT* So, under A no errors are allowed, under B no errors are allowed, **under C errors greater than 1 e are allowed.**	
5.5.2.2	NL	The term "*measurement software*" seems to be meant to replace the term "legally relevant software". However this is not consistently used in this clause.	P+ "measurement software" has been replaced by "legally relevant software" in the entire document
5.5.2.2	Secretariat	The terms "legally relevant data, device-specific parameters, etc. should be defined and consistently used in 5.5.2.2	See new definition under T.2.8 and respective amendments to 5.5.2.2
5.5.2.2	SA	Why are there notes in this section? As the word shall is used in the notes it means that these requirements are mandatory and not merely information notes. Par a.) We do not agree with the words "reasonable period of time". It should be available on the instrument, until the next intervention.	P+ 5.5 has been changed to avoid "shall" whereever possible; in addition, "Note" has been replaced by "this requirement implies that..." P+ Considered in 5.5.2.2 a) by adding "...available until the next verification or comparable official inspection."
5.5.3	US	The U.S. requests that the term "legally relevant data" be defined in this document. Additionally, guidelines should be supplied or applications identified where "legally relevant data" may be required. For example, storage of legally relevant data is required where transactions are invoiced (customer is issued a statement for payment based upon the transaction) at a later date, when the customer is not present for the determination of the amount, or for special applications identified and legislated by the state. The data for preset controls (calibration and configuration) should be distinguished from legally relevant data since there is no need to reconstruct transactions for instruments that store data for preset controls. The U.S. also requests that data storage devices (DSDs) be identified as a feature, option, or parameter on OIML certificates if they are incorporated in the instruments.	P+ See new T.2.8 "software", and amendment of 1st paragraph: "... that is intended to be used for long-term storage of weighing data for legally relevant purposes, the following..." P+ See new definitions under T.2.8, especially T.2.8.1 through T.2.8.4 P+ See new para 5.5.3.7

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
6	SA	The heading is misleading and caused controversy in RSA. This section also applies to self indicating instruments with levers etc. Suggestion: Change heading to the following: Technical Requirements for a non-self indicating instrument and self indicating or semi-self indicating instrument with mechanical components" At the end of the 1st Paragraph in the introduction add the following sentence: "Where relevant, requirements also apply to mechanical components used in self and semi-self indicating instruments"	P- Not accepted, because we are not aware of any misunderstandings in the past. In addition, there was no vote to include self- and semi-self-indicating instruments in this chapter. This might even lead to more confusion.
6.1	SA	It is not clear why there should be both discrimination and sensitivity tests for non-self indicating and self indicating instruments. Discrimination and sensitivity are essentially the same thing only being applied differently. The term "discrimination" is used for determining a self-indicating instruments ability to react to small changes of load while "sensitivity" has traditionally been used for the same purpose in the case of non-self-indicating instruments. The need to overcome any threshold on a non-self-indicating instrument is inconsistent with the design and principle of this type of instrument and is, therefore, unnecessary. In addition the words "with a slight impact" in the case of the minimum sensitivity test is vague. What is a slight impact? It is recommended that the traditional use of the terms "discrimination" and "sensitivity" be retained for self-indicating and non-self-indicating instruments respectively. It is also recommended clause 3.8.1 be amended as follows:- "3.8.1 Discrimination – Self-indicating instruments [digital & analogue] When a load of 1,4 times the actual scale interval is added to or	See our responses to the comments on 3.8.1

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		removed from the instrument at equilibrium the indication shall change by at least one scale interval. It is also recommended that clause 6.1 be amended as follows:- "6.1 Minimum sensitivity – Non-self-indicating instruments When an additional load equal to the value of the maximum permissible error for the applied load, but not less than 1 mg, is placed on the instrument at equilibrium it shall cause a permanent displacement of the indicating element of at least: 1 mm for an instrument of class I or II 2 mm for an instrument of class III or IIII with Max ≤ 30 kg, 5 mm for an instrument of class III or IIII with Max > 30 kg." See also 3.8.1	
6.3.2	US	Both the U.S. and R 76 6.2.2.5 require that it be possible to secure poise parts that are detachable; however, the U.S. has a requirement that knives be hard and sharp, etc. R.76 6.3.2. Hardness has a similar requirement, however it is directed more to the lever knives and is silent with respect to poise knives. The U.S. recommends that 6.3.2. be amended as follows: 6.3.3 Hardness Contact parts of knives, bearings, friction plates, sliding poise devices, interlevers, interlever supports and links shall have a hardness of at least 58 Rockwell C.	P+
6.6.1.1	US	U.S. manufacturers have reported that R 76 can be interpreted to require either notches ***or*** graduations for scale (graduation) mark. The U.S. requirements permit notches, or marks, or a combination of notches and marks. The U.S. recommends that 6.6.1.1. be amended to provide uniform application of the requirement as follows: 6.6.1.1. Scale Marks The scale marks shall be lines or notches, ~~either on the edge~~, a combination of both, or on the flat of the graduated shank.	P- No change, because there was no vote, and might even lead to confusion

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
7.1.2	NL	G): Delete the asterisk and text: *"(*) Max may be also interpreted as the actual range of indication, as per 4.**4**.7."* Meant is probably 4.**6**.7. However, with a multi-range instrument this could lead to misunderstandings about the actual subtractive tare effect.	P+ Both deleted
7.1.4	NL	We propose to change Figure 7 according to the example below. Figure 7 For a multi-interval instrument more than one weighing range (W1, W2)For an instrument with weighing ranges in different classes For an instrument with Max 2/5/15 kg Max 20kg 100kg Max 1000g 5000g Min 20 g Min 200g 1kg Min 1g 40g e = 1/2/5 g e= 10g 50g e= 0,1g 2g d= 0,02g 2g b): The acceptable solution is superfluous.	P+ proposal considered in Figure 8 (renumbered) P+ Para b) has been deleted
7.1.4	SA	c): Fixing: 1st Paragraph: Replace the words "has to" with "shall"	P+
7.1.4	UK	Need to define "permanently". Does it mean all should be displayed 100% of the time? Is it ok to 'scroll' the display by showing Max, Min, and e, in a serial fashion i.e. not all at the same time? After allowing the markings in "B" and "G" to be displayed on demand on the display, it then requires Max, Min, e etc to be near or on the display. I don't know if this means permanently or whether it still allows this to be on demand. It seems ambiguous.	P+ See amendments to the 3rd para, and changes to the 4th para, and the new acceptable solution under a), and changes to acceptable solution under b) of 7.1.4
7.1.4	US	There appears to be typographical errors in the last sentence of the first paragraph in 7.1.4. The sentence should read: 7.1.4. Presentation of descriptive markings	

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		The descriptive markings shall be indelible and of a size, shape and clarity allowing easy reading. They shall be grouped in one or two clearly visible places either on a plate or sticker fixed permanently to the instrument, or on a non-removable part of the instrument itself. In case of a plate or sticker which is not destroyed when removed, a means of securing shall be provided, e.g., a control mark that can be applied. The above-proposed statement and similar statements a few lines down and in "c) Fixing" should be consistent. It shall be possible to seal the plate bearing the descriptive markings unless its removal will result in its destruction. If the data plate is sealed, it shall be possible to apply a control mark to it. c) Fixing. . . The plate may be glued or consist of a transfer provided ~~that~~ its removal results in its destruction. The U.S. requests clarification in the second paragraph, second sentence. What kind of "evidence" is acceptable, and what is meant by the term "intervention"? The U.S. suggests that the acceptable solution in "b) Dimensions" is not needed and can be removed	P+ P+ P+ P+ Sentence deleted, see also UK comment above P+ Sentence deleted, see also NL comment above
7.1.5.3	NL	It is superfluous to mention the number of the OIML certificate (of Conformity) here, because this is a requirement of the OIML certificate system. Also refer to our general comment number 2.	P- We don't think so, reference to OIML R60 helps for clarification
7.2.1	CECIP	In "For application of the verification …" the sizes of 200 mm² and the diameter of at least 25 mm are compared with the size of present instruments too voluminous and cause problems in many cases. In several countries it has long been recognised that the purpose of verification marks are to indicate to enforcement officials that the instrument is in a valid	P+ But the sizes have been changed only to 150 mm^2 and 15 mm, respectively (see also NL comment below)

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		verification state. The note implies that the verification marks have to be accessible to the user and there must be a note on the instrument indicating where these marks are located if they are in a hidden place. The location of verification marks is normally specified in the Type Approval Certificate and the principle in the past has been that they should be accessible to enforcement officials during inspection / in-service use monitoring. (Compare this requirement with those for Liquid Fuel Meters, where the verification marks are all inside the casing of the instrument, there is no requirement for the marks to be visible to the user or for any notice indicating where the marks are located.)	P+ In the note "to the user without tools" and "the user" has been deleted
7.2 and 7.2.1	NL	As there is no further subdivision of 7.2, clauses 7.4 and 7.4.1 can be combined.	P+
7.2.1	NL	Delete the "acceptable solution', but instead, refer to the kind of verification marks in use under national legislation. b): In spite of our previous remark: The area of 200 mm^2 should be reduced to 100 mm^2 and the diameter of 25 mm changed to 18 mm. As present instruments are relatively small compared to the old sizes.	P- No change, because there was no support for such a change by the vote P+ See also our response to CECIP comment above
7.2.1	US	The U.S. recommends that 7.2.1. be amended as follows: An instrument shall have a place for the application of verification marks. This place shall: - be such that the part on which it is located cannot be removed from the instrument without damaging the marks, - allow easy application of the marks without changing the metrological qualities of the instrument, - normally be visible without the instrument having to be moved when it is in service. Note: If technical reasons ~~allow~~ restrict or limit the verification mark(s) to be fixed only in a "hidden" place (e.g. when an instrument– in combination with a POS device- is integrated in ~~an~~other equipment) this	P+

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		can be accepted if these marks are easily accessible to the user without tools, and if there is a legible notice provided on the instrument in a clearly visible place that points the user to these marks, or if its location is defined in the operation manual, the OIML Certificate and OIML Test Report. - be appropriate in size depending on national requirements. Acceptable solution: An instrument required to bear verification marks shall have a verification mark support, at the place provided for above, which ensures the conservation of the marks: a)when the mark is made with a stamp, this support may consist of a strip of lead or any other material with qualities similar to lead *(Clarification requested. e.g. like plastic, brass, etc?)*, inserted into a plate fixed to the instrument, or a cavity bored in the instrument. b)when the mark is of the self-adhesive type, a space shall be provided on the instrument for the application of this mark. For application of the verification marks a stamping area of at least 200 mm^2 is required. If self-adhesive stickers are used as verification marks, the space for these stickers shall have a diameter of at least 25 mm. These marks shall be adequately durable for the intended use of the instrument, e.g., by means of a suitable protection.	P- Not accepted, because not practicable P+ Has been changed to: "... material with qualities similar to lead (for example plastic, brass etc. depending on national legislation), inserted ..." P+ "e.g." corrected in the entire document
8.2.1	UK	Should this also include reference to the new Section 3.10.4 on families of instruments? (For a family, more than one instrument may need to be submitted.)	P+ Considered by amending 1st para: „The modular approach as per chapter 3.10.2 and testing of a family of instruments or moduls as per chapter 3.10.4 may be more appropriate and efficient."
8.2.1	US	The U.S. recommends that photographs shall also be kept confidential by the approving authority. U.S. manufacturers report that they frequently submit instruments for type evaluation before design (appearance) patents have been filed and believe that the appearance should be confidential. The U.S. recommends that 8.2.1 Application for type approval be amended as follows: The application for type approval shall include the submission to the approving authority of normally one instrument representative of the submitted type. The	

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		modular approach as per chapter 3.10.2 may be more appropriate and efficient. The applicant shall provide the following information and documents ~~shall be provided by the applicant~~, as far as applicable. 8.2.1.2: All ~~documents of the~~ weighing instrument documents, including ~~with the exception of~~ the photo (no. 11) shall be kept confidential by the approving authority.	P+ P+ P- Not accepted, but we propose to amend No. 11 in order to avoid misunderstandings: "Drawing or photo of the instrument showing the principal and the location of verification and securing marks to be applied, which is necessary to be included in the OIML certificate or Test Report.", and amend "...drawing and photo..." in the para after No 11.
8.2.1.2	AU	The final statement in this point, that all documents shall be kept confidential except the photo showing verification and securing marks, is not acceptable. Authorities need to be in a position to be able to have non-conformance with the approved type detected (otherwise there is quite clearly no point in type approval). It is therefore essential that adequate information be able to be made available to provide a reasonable chance of non-compliance being detected (initially this detection may be done by people outside the type approval authority – e.g. by weights and measures inspectors). Clearly some types of information (particularly items 7, 8, 9, 10) may need to be kept confidential – however much of the other information mentioned in this clause should be public (e.g. published in the type approval certificate).	P- See response to US comment under 8.2.1 above
8.2.1.2	NL	Add under the heading: *"All numbers in brackets refer to a clause of this Recommendation."* Item 10: Change "see chapter 5.5.2.2" to "(5.5.2.2)".	P+ P+

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		Last sentence: Change *"All documents of the weighing instrument with the exception of the **photo (no. 11)** shall be kept confidential by the approving authority."* to "*All documents of the weighing instrument with the exception of the **documents needed to check conformity of the instrument to the approved type** shall be kept confidential by the approving authority*."	P- See response to US comment under 8.2.1 above
8.2.1.2	SI	Change in item 4.2 (CE mark!) is necessary. Also a reference should be added to chapter 5.5.1 (specially Table 11), where required documentation for instruments with programmable and loadable software is stated.	P+ Considered by "... elements, CE and related or similar conformity marks…" P+
8.2.2	UK	"spotcheck" should be "spot check".	P+
8.3	US	The U.S. recommends removing the gender specific references and amend 8.3. Initial verification as follows: 8.3 Initial verification Initial verification may be performed by authorised national bodies or by the manufacturer itself ~~himself~~ provided that, – according to national rules, – ~~his~~ the quality system for production is acknowledged for this task. Initial verification shall not be performed unless conformity of the instrument to the approved type and/or the requirements of this Recommendation is established under the responsibility of an authorized body. The instrument shall be tested at the time of installation and ready for use, unless it can be readily shipped and installed after initial verification. Initial verification may be carried out at the manufacturer's facility ~~works~~ or any other location; 1) if transport to the place of use does not require dismantling of the instrument, 2) if the taking or putting into service at the place of use does not require assembly of the instrument, or other technical installation work likely to affect the instrument's performance, and 3) if the gravity value at the place of putting into service is taken into	P+ Considered by "… by the manufacturer itself provided that – according to national rules – its quality system for…" P+ P+ Considered, but "1), 2), 3)" replaced by "a), b) and c)"

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		consideration or if the instrument's performance is insensitive to gravity variations. In all other cases, the tests ~~they~~ shall be carried out at the place of use of the instrument.	P+
8.3.3	SA	3rd Par: Change "approving authority" to "verification authority"	P+ Considered by " The approving authority responsible may, ..."
8.3.3	CECIP	We have big problems to understand requirements, testing and tolerances especially in respect to zero and tare operations and testing under "continuous disturbance". - Is it meant that the test of temporary disturbance is taken with the "automatic release of the functions print, data storage, zero setting, tare setting in combination with the stability criteria" and that in all cases the deviation shall not deviate more than 1e? - We have no idea for an objective test for "continuous disturbance" especially during 8.3.3. If testing is required in 8.3.3 it should be easy and give no way for discussions when an instrument is refused. See also 4.4.2 and A.4.12	P+ This item has been removed from 8.3.3 and is now treated under 4.4.2 and A.4.12 (type approval) only, see also response to NL comment below
8.3.3	NL	Indent 3.7.3 is not a requirement (as written now), it is a test to determine if substitution is possible. This could be added to the first indent Indent 4.4.2 is a test that is already checked at type-approval. It is not necessary to repeat it at initial verification.	P+ The sentence „- 3.7.3 (if applicable) …" has been deleted P+ Deleted in 8.3.3, see also response to CECIP comment above
8.3.4	UK	(heading): Is it still ok to use the word "stamping"?	Yes, we think so
A.1	NL	Replace "*Consider the operati**onal** manual*" by "*Consider the operati**ng** manual **or equivalent useE-documentation**.*" And delete the last 7 words "*or an ...the user.*" from the note	P+

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
A.4.1.1	CECIP	For example humidity and especially change of air pressure even during one day have an effect on air buoyancy which may cause deviations which cannot be ignored during testing of high resolution scales of accuracy classes I and II. Therefore we ask to integrate the following sentence in general for all tests: "All necessary corrections in respect to influence factors due to the test load shall be applied."	P+ Considered by adding the following sentence: "For instruments of class I all necessary corrections in respect to influence factors due to the test load shall be applied."
A.4.1.11	UK	Is this requirement compatible with section 3.2 2nd last paragraph?	Yes, we think so
A.4.2.3	CECIP	Accuracy of zero setting A.4.2.3 may be combined with weighing test A.4.4.1 and accuracy of tare setting A.4.6.2 may be combined with weighing test A.4.4.1 resp. A.4.6.1 (we believe). In case of A.4.6.1 this test may be replaced by numerical or graphical consideration. As under technical aspects for digital electronic instruments there is no difference between accuracy of zero setting and accuracy of tare setting technology we understand that in case of numerical or graphical consideration under A.4.6.1 no additional test for A.4.6.2 is needed. Do you agree with our interpretation? See also A.4.6.2	P+ Considered by changing A.4.6.2: „The test may be combined with A.4.6.1“ and amending A.4.6.1: “Simulation of…” (in A.4.4.1 the tare device is not in function) We do not fully agree, because at every tare load it must be checked whether the mpe are met. Since the considerations of A.4.6.1 are not related to the accuracy of the tare device, A.4.6.1 does not substitute A.4.6.2. Nevertheless, there is some practical advantage in combining A.4.6.1 and A.4.6.2.
A.4.3	UK	In Part a, is the word “center” (US English); everywhere else in this guide it is “centre” (UK English). It should be consistent.	P+ Changed to „centre“
A.4.4.5	NL	Change this clause according to the changes to 3.7.3.	P- Not necessary, because of changes and amendments made in A.4.4.5
A.4.6.1	JP	Please clarity “other appropriate procedures” with concrete description.	P+ Considered by adding a sentence to the 3rd para: „Simulation of a tare-balancing operation by displacement (shifting) of the error limits (mpe) to any points of the error curve (= curve of weighing test results). Checking if the error curve and hysteresis are inside the mpe at every point.”
A.4.6.1	NL	3rd par.: Change “*In case of 8.3 and 8.4 the practical …*” to “*The practical …*”. Reason: This may also be applied during type-approval (especially when	P- Not accepted, because the “graphical method” shall be restricted only to 8.3 and 8.4, and should not be

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		testing modules).	applied for type approval.
A.4.6.1	SA	3rd Par: It is not clear with what the practical test may be replaced. Is it acceptable to replace the physical test with an appropriate procedure?	P+ see response to JP comment above
A.4.6.1	UK	When this requires a test near to Min, does it need the same "(Min only if Min ≥ 1 mg)" that has been added to A.4.4.1?	P+ Clarified by amendment in A.4.6.1
A.4.6.2	CECIP	Accuracy of zero setting A.4.2.3 may be combined with weighing test A.4.4.1 and accuracy of tare setting A.4.6.2 may be combined with weighing test A.4.4.1 resp. A.4.6.1 (we believe). In case of A.4.6.1 this test may be replaced by numerical or graphical consideration. As under technical aspects for digital electronic instruments there is no difference between accuracy of zero setting and accuracy of tare setting technology we understand that in case of numerical or graphical consideration under A.4.6.1 no additional test for A.4.6.2 is needed. Do you agree with our interpretation? See also A.4.2.3	P+ Only accepted for 8.3.3 and digital electronic instruments (if accuracy of tare setting (A.4.6.2) has been combined with the weighing test (A.4.6.1), <u>but:</u> P- Not accepted for 8.2 (Type approval) or any kind of instrument
A.4.6.2	SI	Change a reference to A.4.4.1 with a reference to A.4.6.1.	P+ See response to CECIP comment on A.4.2.3
A.4.7.1	KR	…not more than four points… Example : - with ~~6~~ mechanical…has ~~6~~ points of support They don't accord with a headline. Proposal: A.4.7.1…not more than four points… Example : - with 4 mechanical…has 4 points of support	P+ Examples have been changed as follows: - directly into 3 load cells has 3 points of support - with 4 mechanical ..... has 4 points of support - directly into 1 single ...
A.4.7.1	SI	Move the text "Examples" to A.4.7 because line 2 in "Examples" can be misleading in chapter A.4.7.1.	P+ See above
A.4.7.5	NL	Delete "*As an extreme,* " and "*at all*".	P+
A.4.8.2	KR	This applies only to type examination and to instruments with ~~d ≥ 5 mg~~. Same as 3.8.2.2: Must use (1/10)d weights, but a examination is impossible because ten 0.5mg is necessary, and weights doesn't exist in 1mg in practice	P- See response to comment under 3.8.2.2

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		hereafter if does 5mg. Proposal: This applies only to type examination and to instruments with d ≥ 10 mg.	
A.4.9	SA	It is not clear why discrimination for a self-indicating instrument is tested from a position of equilibrium and why sensitivity in the case of a non-self-indicating instrument is tested while the load receptor is oscillating. This would be impossible to achieve where the load receptor is in the form a platform as is the case in a compound lever type scale. It is felt that if the sensitivity test is to be of any value then it should too be applied from a position of equilibrium with the beam or steelyard being at a position of rest. See also the comments regarding the "slight impact" under clauses 3.8.1 & 6.1 It is recommended that clause A.4.9 be amended as follows: "A.4.9 Sensitivity of a non-self-indicating instrument (6.1) During this test the instrument shall be in a position of equilibrium, the indicating element being in a horizontal position of rest. The addition of a load equal to the value of the mpe for the applied load, but not less than 1 mg, shall result in the displacement of the indicating element as specified in 6.1. This test shall be performed with a minimum of two different loads which shall include zero and Max."	P- See response to comments under 3.8.1 and 6.1
A.4.10	CECIP	Please recognise for high capacity instruments clause 3.7.3 where is written "The repeatability error has to be determined with a load of about the value where the substitution is made, by placing it 3 times on the load receptor."	P+ Considered by amending A.4.4.5, 3rd para: "The results of A.4.10 may be used if the test loads have a comparable mass."
A.4.10	KR	For initial verification one test with about ~~0.8~~ of Max is sufficient. The reliability was already secured with 100% test loads. Proposal: For initial verification one test with about 0.5 of Max is sufficient.	P- No change, because there was no respective vote
A.4.10	NL	Change "*For **initial** verification one **test** with about 0.8 of Max is sufficient. **Normally no more than** 3 weighings …*" to "*For verification one **series of weighings** with about 0.8 of Max is sufficient. 3 weighings …*"	P+

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
A.4.12	CECIP	We have big problems to understand requirements, testing and tolerances especially in respect to zero and tare operations and testing under "continuous disturbance". -Is it meant that the test of temporary disturbance is taken with the "automatic release of the functions print, data storage, zero setting, tare setting in combination with the stability criteria" and that in all cases the deviation shall not deviate more than 1e? -We have no idea for an objective test for "continuous disturbance" especially during 8.3.3. If testing is required in 8.3.3 it should be easy and give no way for discussions when an instrument is refused. See also 4.4.2 and 8.3.3	P+ See response to comments under 4.4.2
A.4.12	SA	The last paragraph needs to be made clear that it only refers to vehicle mounted, vehicle integrated or mobile instruments.	P+ Considered by changing the 4th para: " ... vehicle integrated incorporated or mobile instruments ...", and moving the 5th para to the end of the 4th para.
A.4.12	UK	(Paragraph staring "In case of vehicle mounted...") If this guide is in US English, then "insure" is correct. If it is in UK English, then "insure" should be "ensure".	P+
A.4.13	CECIP	In our understanding there is an enforcement problem, not one for type approval or initial verification. We cannot solve every enforcement problem in R76. If we try to we will end up with very restrictive requirements that are almost impossible to observe. It has to be accepted that enforcement officials are capable of making judgements, discovering problems, including fraud and misbehaviour. This is exactly what they should be skilled in and R76 or other documents should not be written in such a way that it does the job of the enforcement officials. In addition the manufacturer cannot take the user's responsibility and we will not find test criteria in this case which does not lead to acceptance in one country and refusal in the other. Therefore we ask you to delete this clause.	We do not agree that this is an enforcement problem, but more a problem of: 1. the suitability for the intended use, 2. the proper definition of chatacteristics by manufacturers, and 3. the large number of different constructions and applications. We therefore strongly recommend to keep A.4.13 as provisional as it is and add a note that reflects the problems and explains why only some rather general ideas can be provided concerning the proper testing of portable instruments (see new Note under A.4.13).
A.4.13	JP	Not indicated reference number.	P+ Heading has been amended by reference number (4.19)

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
A.4.13	SA	We are not sure of what these tests entail and why tests are done at a site agreed with the manufacturer (submitter) and then at a site of use, which could be the same site. The following wording is suggested if we understand the requirement correctly: To be performed during type evaluation: Perform an accuracy and eccentricity test on an instrument with the load receptor positioned on a level base. Perform an eccentricity test on the same load receptor when installed on a base that is out of level to the full extent of the limits given by the manufacturer. Further test shall be performed with the load receptor in all possible out of level positions specified by the manufacturer. At the time of verification it is only necessary to check that the sites at which the instrument is used is level within the maximum limits for which the instrument is approved to be installed.	P+ See response to CECIP comments above
A.5.1.2	UK	Remove the second “be” in first sentence.	P+
A.5.1.3	UK	Does “To reach the switching-off point, the instrument must be tilted as long as the indication of the instrument is not yet switched off.” mean “To reach the switching-off point, the instrument must be tilted until the indication of the instrument switches off.”?	P+ Yes; clarification (hpefully) achieved by changes and amendments to A.5.1.3 as follows: - heading: „“… open locations (3.9.1.1, d and 4.18.1) - 2nd sentence: “as specified by the applicant” deleted - 5th para replaced by new para: “The test shall be performed near the switching-off point (in case of an automatic tilt sensor) or near the tilt where the load receptor come to contact to the surrounding frame construction (in case of a cardanic suspension), this is the limiting value of tilting.”
A.5.4	SI	The second paragraph is not revised according the proposed revision of chapter 3.9.3 (not only variation of AC mains voltage but also other possibilities (external or plug-in, battery)).	P+ Considered by changing the 2nd para:: “...of AC mains voltage, external or plug-in power supply (AC or DC) or battery operated instruments, and road vehicle battery operated instruments.”

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
			vehicle battery operated instruments."
A.5.4.2	UK	The "2" of "20%" is in bold.	P+
A.5.4.3	JP	For harmonization with D11, please revise the following. 14.5V → 16V 29V → 32V	P+ In addition, the reference [5] has been added to the 1st para: „… clause 4.4 [5]"
A.6	CECIP	We would like to point out that R51 does not require endurance testing although the amount of weighing cycles with AWIs usually is much higher than with NAWIs. In R76 the test is limited already now to instruments with Max ≤ 100kg. A manufacturer takes care in the development of the instrument already that it is suitable for its purpose. Therefore we think the test is unnecessary. That will save time and costs. See also 3.9.4.3	P- No such respective vote
B.2.1	NL	Can be deleted as the title of Annex B is "***ADDITIONAL*** *TESTS FOR ELECTRONIC INSTRUMENTS".*	P+ B.2 and B.2.1 deleted; "B.2.2" is now "B.2"
B.2.3	NL	Can be deleted as the title of Annex B is "***ADDITIONAL*** *TESTS FOR ELECTRONIC INSTRUMENTS".*	P+ B.2.3 deleted
B.3	SA	Last Paragraph: Replace the words "are to" with "shall"	P+
B.3	UK	Regarding the EMC tests listed in the Bibliography. The Bibliography calls up the current versions of the IEC EMC tests. However these standards are revised at very regular intervals. Therefore it is possible (even probable) that a manufacturer may already have his instrument tested to the latest version of the standards. Therefore it is possible that the tests will have to be repeated to the "old" versions of the standards listed in OIML R76. This adds to cost. In addition, type approval laboratories will be burdened with the additional cost of running two versions of the IEC tests - the "old" version for R76 and the current versions for other EMC testing purposes. We suggest that the Bibliography refers to the latest versions of the standards but carries an additional clause such as : "The usage of later revisions to these standards is permissible."	P+ See response to UK comment under "General"

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		See also "General"	
B.3.1	JP	For harmonization with D11, please revise the following. 'Number of half cycle' → 'Number of cycle' 100% → 60% 250 → 50	P+ Considered
B.3.1	UK	The reductions and number of half cycles don't seem to bear any relationship at all to the present values, and don't seem to make sense, eg reduction of 100% (to nothing) lasts for 250 half-cycles (which seems very long!), but reduction of only 30% lasts only for 0.5 half-cycles (whatever that is!). Is this requirement correct?	Yes, this is reasonable from the metrological point of view and in line with EN 61000-4-11 (1994); therefore we have made the respective corrections under "Test severity". But: Unfortunately there seems to be a contradiction to the latest draft D11 which suggests the opposite order for the number of cycles; this problem will be clarified with the TC5/SC1 secretariat
B.3.2 and B.3.3	UK	In the sentence "The duration of the test shall not be less than one min for...", if "min" means "minute", then it would be nicer to put "minute", as we use "Min" to mean something else.	P+
B.3.3	NL	Is this test necessary? It simulates strike of lightning. Please note clause 8.4.5 of draft OIML D 11, which reads: "*This test is only applicable in those cases where, based on typical situations of installation, the risk of a significant influence of surges can be expected. This is especially relevant in cases of outdoors installations and/or indoor installations connected to long signal lines (lines longer than 30 m or those lines partially or fully installed outside the buildings regardless of their length).* *Therefore, the test for the influence of surges should only be prescribed in the relevant Recommendation for instruments that are connected to a network.* *The test is applicable to the power lines, the communication lines (internet, dial up modem, etc.), and other lines for control, data or signal mentioned above (lines to temperature sensors, gas or liquid flow sensors, etc). It is also applicable to DC powered instruments if the power supply comes from a DC network."*	P+ This proposal has been added as an introductory note to B.3.3 (marked yellow) TC9/SC1 members are asked for comments

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
B.3.3	SA	1st Par: Replace "exposure" with "exposing the EUT…"	P+
B.3.5	KR	Make Bibliography in reference to the IEC 61000-6-2. Proposal: Test severity : …IEC 61000-6-2…the instrument. (see Bibliography//)	 P+
B.3.5	NL	There is a gap in the frequency band. This is not in accordance with D11 (refer to CD 2004). Furthermore the "standard" severity level is increased. Is this really necessary? How shall it be determined what is "*the most sensitive side of the instrument* ?"	P+ Adapted to D11 This can be simply determined by pretests
B.3.5	SA	We would prefer to remove the reference to 3 V/m in "Field Strength: 10 (3*) V/m", and test all instruments to the 10V/m, in order to avoid having to restrict the use of instruments. It is possible for a retail store to be located in a heavy industrial area. "Test Severity:" Who decides which is the most sensitive side of an instrument?	P- No change - cannot be generally demanded, and is not in line with the vote. But can, of course, be recommended to manufacturers This can be simply determined by pretests
B.3.6	NL	The severity level shall be adjusted to the level in B.3.5 (if changed). As this test deals with **conducted** disturbances, delete "*Radiation shall be applied only on the most sensitive side of the instrument..*"	P+ P+
B.3.7	NL	Title: Change *"EMC"* to *"EMI"* because R76 only deals with immunity.	P- "EMC" is correct
B.3.7.1	NL	Which test severity is to be applied?	P+ Appropriate test severity values have been chosen in line with new D11 (2004)
B.3.7.2	NL	Which test severity is to be applied?	P+ See response to B.3.7.1 above
B.4	NL	Change order of clauses. Insert B.4 before B.3 so all performance tests for influence factors are grouped together.	P- No change of structure according to vote
B.4	SA	"Test procedure in brief:" Replace the word "proof" with "prove" in the last sentence of the paragraph.	P+
B.4	UK	Should "in order to proof its stability", be "in order to prove its stability" or would "test" be better?	P+ See above

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
C	SA	General: It is not clear from this Annex which components of a PC are subjected to influence factor tests. If the complete PC are subjected what happens when components within the PC are replaced? Is the PC subjected to influence factor tests again?	P+ A clarifying note has been added to C.1, point 5.5, making reference to Table 11; see also responses to comments under 5.5.2
C.1	KR	Editorial proposals to C.1: 3.1.2 ~~Minimum value of~~ the verification —► 3.1.2 The verification 3.9.3 ~~Mains~~ power ~~suply~~ —► 3.9.3 Power supply 4.1 General requirement —► 4.1 …requirement of construction 4.4 Digital indicating device —► .....indicating and printing device 4.9 Auxiliary verification devices —► 4.9 …devices (removable or fixed) 4.11 Devices for…devices ~~in use~~ —► 4.11 Devices for…devices ~~in use~~ 4.14 Additional requirements for ~~an~~ instrument…the public ~~with price indication~~. —► Additional requirements for a price-computing instrument…the public	P+ All proposals considered
C.1	SA	The whole of C.1: All of these clauses seem to be misplaced, as they seem to form part of the Technical requirements. At the time of testing it will not be known what the indicator will be used with. Tests will be carried out according to manufacturers specifications.	P+ The introductory note to C.1 has been completely revised and the sentence “Additional requirements…” between 4.16 and 5.1 in the list of applicable requirements deleted.
C.1.7	UK	The present wording “Indicators employing six wire technology with remote sensing (of the load cell excitation voltage) shall be used, when the load cell cable has to be lengthened or several load cells are connected by means of a separate load cell junction box.” actually wrongly states (because of that comma) that only 6-wire load cell connections may be used. Removing the comma would help, but it might be better to say:	P+

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		"Indicators employing six-wire technology with remote sensing (of the load cell excitation voltage) shall be used if the load cell cable has to be lengthened or if several load cells are connected by means of a separate load cell junction box."	
C.2	SA	Delete the words "R76-1" wherever it appears.	P+ „R76-1" deleted in the entire document (but not "R60")
C.2	Secretariat	The possibility of testing (and certification) of families of indicators should be emphasised.	A respective note has been added under C.2 and a reference to C.2 in 3.10.4
C.2	UK	Refers to "A.4.1.7 of R76-1", whereas other references to other sections leave out the "of R76-1" part as being unnecessary. Last sentence refers to a load cell or a load receptor. Isn't a load receptor just the plate on which the load rests, so how can it be an alternative to the load cell?	P+ see response above P+ Considered by changing „load receptor" into „weighing platform with load cell"
C.2.2	SA	Table 12: Reference to C.3.2.1 below the table is incorrect.	P+ Changed to "C.3.1.1"
C.4	NL	This clause gives the contents of the OIML Certificate of Conformity. However this is not complete. Also refer to our general remark number 2. Equivalent to D.4 some description about the test report needs to be added.	P+ The contents of C.4 and D.4 have been checked and amended to have the same structure and to be in line with OIML-P1
D.1.1	KR	Editorial proposals to D.1.1: 3.9 …to influence and time —► …to influence quantities and time 4.4 Digital indicating device —► ...indicating and printing device 4.13 …for direct sales to public —► …for direct sales to the public 4.14 Additional requirements for ~~an~~ instrument…the public ~~with price indication~~. —► Additional requirements for a price-computing instrument…the public	P+ All proposals considered

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
D.2.2	SA	2nd Paragraph, 1st sentence: Change wording to: "The indicating device shall indicate a higher resolution…." 2nd Paragraph, 1st sentence: Change wording to: " The higher resolution shall be noted in the Evaluation Report."	P- This seems to be a misunderstanding: the sentence does not address a higher resolution, but a "differentiated scale division". This digit shall of course be displayed.
D.4.1	NL	Refer to our general remark number 2.	See our response under "General"
E.2	Secretariat	Chapter E should contain one or two representative examples of compatibility checks	Two examples (1 range road vehicle weigher and 3 range industrial scale) have been added after Chapter E.5
E.2.6	AU	The calculation in E.2.6 for a multiple range instrument are problematic. It appears that the practice in WELMEC (which has been copied into the 'Form: Check of Compatibility' on page 116), is to use formulas $n_{LC} \geq 0.4\ Max_r / e_1$ where DR(Z) is not known, and (1) $Z \geq 0.4\ Max_r / e_1$ where DR(Z) is known. (2) However the formula $DR \bullet E / E_{max} \leq e_1 \bullet R / N$ in E.2.6 is equivalent to $Z \geq 0.5\ Max_r / e_1$. (3) Clearly there is a discrepancy between (2) and (3). Our recommendation would be that the formula $Z \geq 0.5\ Max_r / e_1$ should apply where Z(DR) is known (i.e. as currently in E.2.6) And that a formula90 $n_{LC} \geq 0.625\ Max_r / e_1$ should apply where DR(Z) is not known (4) The current formulas (1) and (2) in E.2.6 effectively provide an incentive in	P- The factor 0,4 is OK, as it takes into consideration the two possible cases: 10/5 = 2 and 5/2 = 2,5.

R76-1 Section	TC Member/ Liaison	Comments	Response of TC9/SC1 Secretariat
		some cases for manufacturers not to specify the DR(Z) value. We believe it should be an advantage and encouraged to specify a DR(Z) value, and replacing (1) with (4) achieves this. In any case, the discrepancy mentioned above should be resolved. In the note below E.2.9, if "… a more moderate calculation …" is intended to mean 'more simple' – we disagree that it is a more simple approach and suggest the following "Alternatively equivalent calculations can be carried out using relative values (Y and Z) from OIML R60" **Check of Compatibility** We do not feel that the "Minimum input voltage in general" (Umin) needs to be checked (it does not seem to relate closely to particular R76 requirements). Checking the Minimum input voltage per verification scale interval is of course essential.	U_{min} may be critical and must, of course, be checked, see new examples after Chapter E.5

OIML TC9/SC1, Revision R76

Comments on the Working Draft (15 December 2003) and Secretariat's Responses